CERCLA
Preliminary Assessment Report

Illinois Environmental
Protection Agency
P.O. Box 19276,
Springfield, IL 62794-9276

CERCLA Preliminary Assessment Report

for

Illiana Scrap Processing

ILD 984791673

INDEX

SECTION 1

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Illiana Scrap Processing, Incorporated site was placed on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) on August 29, 1990. During 1980, several citizen complaints of air pollution at the facility prompted a rather large investigation by the Illinois Environmental Protection Agency's (IEPA or Agency) Division of Air Pollution Control. After the operator of the facility at that time ceased operations, the problems were thought to be resolved. An anonymous complaint about the past operations at the facility recently brought the problems at the site to the attention of the Agency's Division of Land Pollution Control. The Agency then requested the CERCLA discovery action.

The Illiana Scrap Processing facility is a recycling facility. The facility receives common recyclable waste materials from the local area and then ships them out in bulk form to be recycled. Some of the materials which they handle include aluminum, glass, plastic, cardboard, paper, and newspapers. Illiana Scrap does not use any incinerators.

The twenty acre site is located southeast of Crete, Illinois. It is just south of where the community of Faithorn was once located. To reach the site, turn east onto Burrville Road from State Route 1 at the southern edge of Crete. Travel

1.15 miles before turning south on State Street. The entrance to the facility is located approximately one-thousand feet (1000') south of Burrville Road on the west side of State Street.

The Illiana Scrap Processing facility is bordered on the north by land which is vacant with the exception of two residences; to the east by State Street with homes on the east side; to the south by a vacant lot which contains overhead high voltage power lines and an inactive 300 feet deep water well; and to the west by land which formerly contained the Chicago, Milwaukee, St Paul and Pacific Railroad tracks and is now used as farmland. The site is located in the northwest quarter of the southwest quarter of Section 15, Township 34 North, Range 14 East of the Third Principal Meridian, Will County.

Prior to use by Illiana Scrap Processing, the facility was the site of Crete Metal Company. Prior to that, it was the site of Faith Processing Company, which operated the original incinerator at the facility. The president of Illiana Scrap Processing has stated that he is "buying the property from [William] Ricketts." No connection is known to exist between Mr. Ricketts and any of the businesses which have previously operated at the site. It is suspected that the majority of the contamination and problems which may exist at this facility today are a direct result of actions which occurred

under previous ownership.

Past activities associated with the use of on-site incinerators by Faith Processing and then by Crete Metals is believed to have contributed to documented contamination. The first permit for incineration at the site was granted by IEPA to Faith Processing Company on March 3, 1975 (with a February 28, 1980 expiration date). The application indicated that the incinerator was a United Corporation model G466 to be used for 10% paper, 40% rubber and plastics, and 50% copper by weight. It is interesting to note that a plat drawing from the Chicago, Milwaukee, St Paul and Pacific Railroad Company dated September 17, 1974 indicates a 700' x 700' parcel of property (11.25 acres) located 520 feet south of Faithorn Road (Burrville Road) as being "PROPERTY TO BE LEASED TO FAITH PROCESSING COMPANY For: the processing of zinc and copper." (Please refer to Reference I.)

Eighteen months after Faith Processing received their first permit for incineration, the first complaint of air pollution from the site was filed on September 9, 1976 by a nearby resident who was concerned about "odors from [the] plant created by burning causing difficulty in breathing and eye irritations in the neighborhoods." Agency personnel responded to the complaint on September 16, 1976 by visiting the facility. A memo indicated that "they were burning the plastic and rubber coating off of copper wire...outside of

the building." During the follow-up investigation of September 21, 1976, Division of Air Pollution Control (DAPC) personnel reported finding two small aluminum sweat furnaces as well as the incinerator - none of which were in operation at the time. Two scrap burning areas outside of the building were also noted. DAPC personnel made a pre-arranged visit to the site on October 1, 1976 to view the incinerator while burning insulation off of copper cable. No violations were noted and the complaint was attributed to the open burning, not the incinerator. A second complaint of air emissions from both the incinerator and open burning was received on April 18, 1977 and followed-up fifteen days later with a site visit by DAPC personnel. Again, no violations were found.

The operation permit for the United G466 incinerator was renewed for Faith Processing during August 1979 with a new expiration date of August 27, 1984. A complaint was received August 27, 1979 of "Fumes from stack of plant...causing a sickening odor" which the complainant believed to be from wire reclamation and "causing a health hazard." DAPC personnel phoned the plant and found the facility to now be owned by Crete Metal Company. The date of transferral of ownership is unknown. Also, a second incinerator was being constructed. On September 7, 1979, DAPC personnel visited the site. Opacity readings of 60% - 75% were taken. The permitted United G466 incinerator was not in operation. An unpermitted Joseph Goder 28-N incinerator which was not even

designed for wire reclamation was in operation doing same. A third incinerator was under construction without the required permits. A September 12, 1979 warning letter from the Agency describing the violations noted was sent to Crete Metals.

An October 29, 1979 DAPC memo outlined the problems at Crete Metals, including two unpermitted incinerators and several recent complaints, and recommended that the matter be referred to the Enforcement Section for the necessary legal action to force compliance. On November 9, 1979 the Agency received a several page complaint from a nearby resident, complete with a cover letter, seven photos of emissions from the incinerators, an outline of burning at the facility from October 5 to November 3, 1979, and 74 signatures of nearby residents complete with addresses and dates. The Agency referred the case to the Illinois State Attorney General's office on December 10, 1979.

DAPC personnel obtained emission data from all three incinerators on February 27, 1980 with no emissions violations noted. DAPC personnel again visited the site on March 6, 1980 and took opacity readings from all three incinerators. No violations were noted. Furnaces 1 and 2, the United G466 and the unpermitted Goder 28-N, respectively, were used for copper wire reclamation. Furnace 3, an unpermitted Universal Incinerator Corporation model UC 1000, was used for silver reclamation from photographic film.

Crete Metals simply incinerated the film and the ash was shipped to a client for processing. Opacity readings on March 6, 1980 were within the allowable emissions level of 30%. DAPC personnel visited the site again on March 12, 1980 and found opacities of up to 80% from furnace #3. The afterburner was off and the incinerator was being shut-down to repair damage. It was noted that film was being burned in furnace #1 and "300 to 400 pounds of lead was being recovered from incinerator #2." Another complaint of black smoke on March 4, 1980 and again on March 17, 1980 (separate stacks on each occasion) was filed by a member of the Will County Public Health Department.

On March 14 and 15, 1980 DAPC personnel conducted interviews with "potential witnesses", or nearby residents, for the Crete Metals case. Several complaints of odors and associated ill health were noted. During a visit to the site on March 14, 1980, the operator of the facility described some electrical cable which the facility had been incinerating. It was described as being a six inch diameter copper wire core, surrounded by paper and then a lead sleeve. Apparently, the cable contained an oily substance which the operator believed to be the cause of the smoke. In order to eliminate the excessive smoke, prior to incineration, the cable was placed "outside on the ground" and allowed to "drain". The operator then stated that the oil from the cable was also the same as that used in

transformers, i.e., potentially containing polychlorinated biphenyls (PCB's).

Soil samples were obtained from the site and some nearby residences on March 16, 1980 by IEPA personnel. A Will County Sheriff's Department deputy involved in the sampling noted that he was familiar with complaints due to smoke from the facility. The results of these analyses are unavailable.

On March 17, 1980, the Agency finally received the incinerator construction applications from Crete Metals. (The information was crudely copied from an earlier application filed by Faith Processing.) During a phone conversation of the same date, the operator of the facility stated that he would shut down the incinerators the following day but only after he had completed an order. A March 16, 1980 memo noted that the Illinois Attorney General's office was preparing an injunction against Crete Metals. The Attorney General's office received a March 25, 1980 letter from the supervisor of Crete Township urging that the pollution at Crete Metals be stopped. On April 1, 1980, the circuit court in Joliet upheld a temporary injunction for Crete Metal Company to cease operations.

On April 8, 1980, DAPC personnel held a meeting with three medical experts regarding possible health effects of individuals residing near the facility. Representatives of

Cook County Hospital and the University of Illinois School of Public health were present. An Industrial Hygienist with the U.S. Department of Labor visited Crete Metals during mid-April, 1980 and reported that he felt the plant operator had visible symptoms of "lead overexposure." (Please refer to Reference II.) Also, during the visit, the plant operator stated that twice a year, a load of electronic components was brought to the facility by railroad for molybdenum reclamation. Other health experts visited the area on April 21 and 25, 1980. During the latter visit, biological specimens were collected for analysis.

A United Corporation model 3000 incinerator was noted at the facility during an April 30, 1980 visit by DAPC personnel. Little more is known about the appearance of this incinerator. Apparently, sometime prior to mid-1980, the Universal Corporation no longer recommended the incineration of polyvinylchloride (PVC) insulated electrical wire.

Samples from six private water wells near Crete were drawn on May 2, 1980. Analyses performed for minerals, organics, and pesticides noted that PCB's were not detected (0.1 parts per billion detection limit). The Agency's Division of Public Water Supplies reported that with the exception of iron and total dissolved solids "which were quite high in some samples," there were no values above the maximum contaminant level for public water supplies. (Please refer to Reference

III.)

A May 16, 1980 letter from the Will County Health Department's Director of Nursing informed the Agency of elevated levels of lead in the blood of a Crete Metals employee and his eleven year old son. (Please refer to Reference IV.) It is unknown whether this employee lived near the Crete Metal facility (or another potential source) at the time.

On June 12, 1980, Crete Metal Company's application for the construction of three incinerators was denied for a number of reasons which were listed in the denial letter. In a bitter June 19, 1980 letter from Crete Metal Company to the Illinois Attorney General's office, it was stated that the facility was closed and the operator had "agreed to stay closed".

Several biological samples were obtained from the area surrounding Crete Metals. A June 5, 1980 letter from The Medical College of Wisconsin, Inc. reported of chickens from the Crete Metals area which had been studied (please refer to Reference V). A July 2, 1980 letter from the University of Illinois College of Veterinary Medicine described a horse which had lived near the Crete Metal facility and had been brought in for an autopsy (please refer to Reference VI). And an October 16, 1980 letter described the results of bioassays performed on rabbits by the University of Illinois

College of Veterinary Medicine (please refer to Reference VIII).

Several members of the Agency, USEPA, and a representative from the University of Illinois School of Public Health visited the area and took several soil, sediment, biological, and other samples on June 24 and July 29, 1980 (please refer to Reference VII). After searching the Agency's files and contacting Region V, USEPA, it was determined that the results of these analyses are unavailable.

Some of the lead sheathed copper cable described earlier was given to the Agency by a representative of the power company's generating station on September 29, 1980 in order to have the insulating oil analyzed for PCB's. Upon contacting the laboratory which performed the analyses, it was determined that these results, too, were unavailable.

The Agency received a December 12, 1980 report from the Midwest Center for Mass Spectrometry at the University of Nebraska-Lincoln which contained the results of the dioxin tests from horse fat, stack #2, furnace #2 and a nearby soil sample which indicated dioxin contamination in all four samples. (Please refer to Reference IX.) A technical article was published in the September/October 1981 issue of Archives of Environmental Health which described some of the poor health effects in the area of the Crete Metals facility.

(Please refer to Reference X.)

A complaint received December 23, 1981 alleging that the facility was receiving drums without the proper manifests was followed-up with a site inspection that revealed no drums. An Agency memo stated that during a February 3, 1982 visit to the site, it was noted that the Goder and Universal incinerators had been removed from the premises. It was further stated that the United model was still at the facility but out of service.

As noted earlier, the Agency received an anonymous complaint on May 2, 1990 which briefly described contamination at the facility. This complaint prompted the listing of the site on CERCLIS.

An on-site reconnaissance visit was conducted on November 13, 1990 by Mr. Bruce Ford and Mrs. Judy Triller of IEPA's Division of Land Pollution Control. (Photographs taken during this visit are contained later in this report.) The site is now a recycling collection facility. Six (6) employees were observed at the facility. Recyclable materials are collected, crushed or bound as appropriate, and then sold and shipped off-site for processing. Illiana Scrap does not use any incinerators. During the reconnaissance visit, however, what appeared to be the furnace of an

incinerator was discovered on site. It was setting out in the open surrounded by piles of collapsed cardboard boxes that were awaiting shipment. Some form of manufacturer or model description was briefly and carefully searched-for on the exterior of the furnace but none was found. The present operator of the facility, who appeared to be unaware of the severity of the past problems at the facility, noted that nearly a year ago, some employees had used it to burn some paper and cardboard by building a fire in it. Considering the time of year, the vegetation near the perimeter of the site appeared to be healthy. There were no barriers to prevent entry to the site. A nearby resident who had just recently moved to the area and was unaware of any past problems at the site indicated that he had asked trespassing hunters to leave the Illiana property. This clearly indicates the accessibility of the property to the public.

The elevation of the land surface at the site is slightly over 720 feet above sea level. According to water well logs and other Illinois State Geological Survey literature, the subsurface geology of the area consists of from 41 feet to as much as 138 feet of unconsolidated glacial drift of Quaternary Age. (Area well logs are contained in Reference XI.) Immediately below the drift is bedrock of the Silurian System, commonly referred to as the Niagaran dolomite or limestone. The glacial drift and the fractures of the Niagaran dolomite are hydraulically connected in many areas.

Below the Silurian System lies the Ordovician System which contains the following groups (from shallowest to deepest): Maquoketa, Galena-Platteville, Glenwood-St. Peter, and Prairie du Chien. Below this lies the Cambrian System which contains, among others, the Ironton-Galesville group, and finally the Pre-Cambrian System. All of the public water supply wells in the area appear to be completed in the Niagaran dolomite which yields sufficient quantities of fresh water. The private and the non-communitized water supply wells in the area also draw water from the Niagaran dolomite.

The aquifer of concern is the Niagaran dolomite (and the hydraulically connected glacial till) which nearly all of the groundwater wells in the area draw their water from, both public and private. The driller's log of the groundwater well at the Illiana Scrap Processing facility indicates that bedrock was penetrated at 68 feet and the well completed in the limestone from 68 feet to a total depth of 145 feet. The log heading also indicates that the well was drilled in November of 1974 for Faith Processing.

As previously stated, the nearest private water supply well is located on-site. It is situated just north of the north-east corner of the main building. The nearest public water supply well is located three-quarters (3/4) of a mile to the southeast. Agency records indicate twenty-two (22) active public water supply wells within four (4) miles of the site

which serve (including private wells) a total of approximately 36,723 people (including some residents of South Chicago Heights and University Park which reside over four miles away from the site).

Drainage from the site flows northward to Deer Lake (a fishery), Deer Creek, and eventually to Thorn Creek and the Little Calumet River. There are two storm sewers on the site which were reportedly constructed by "the railroad". The drainage which enters the storm sewers flows to the north. The destination is unknown but suspected to be near either Burrville Road or the pond located approximately 900 feet due north which is also the nearest downslope surface water. There are no known surface water intakes within fifteen (15) miles downstream of the site. A gaging station is located on Deer Creek in Section 14, Range 35 North, Township 14 East, just north of East Chicago Heights. It is approximately ten (10) miles downstream of Illiana Scrap. According to U.S. Geological Survey Water-Data Report IL-89-2 (Volume 2, Illinois River Basin, page 130), the average discharge, or flowrate, at this station (05536235), since 1948 is 17.5 cubic feet per second.

As noted earlier, nearby residents have complained of air emissions since shortly after Faith Processing was issued their first permit for incineration. They have even submitted photos of incinerator emissions to the Agency.

Approximately 26 people reside within one-quarter (1/4) mile of the site, and nearly 29,500 people reside within four (4) miles of the site. This includes residents of seven (7) cities, at least four subdivisions not located within any city limits, and the Balmoral Park Race Track. Again, note the dioxin contamination detected in the incinerator smokestacks.

It is highly likely that someone could come into direct contact with soil contamination from the Illiana Scrap site. This could happen in a number of ways: contacting contaminated soil or sediment, inhaling dust from contaminated soil, or even possibly by ingesting game animals which have been contaminated. The nearby residents and employees of the facility are probably at the greatest risk of coming into direct contact with contaminated soil. It is also possible for the general public to come into contact with contamination from the site. Any nearby residents which were residing in the area during the time Crete Metal Company and/or Faith Processing operated the incinerators probably faced the greatest health risk.

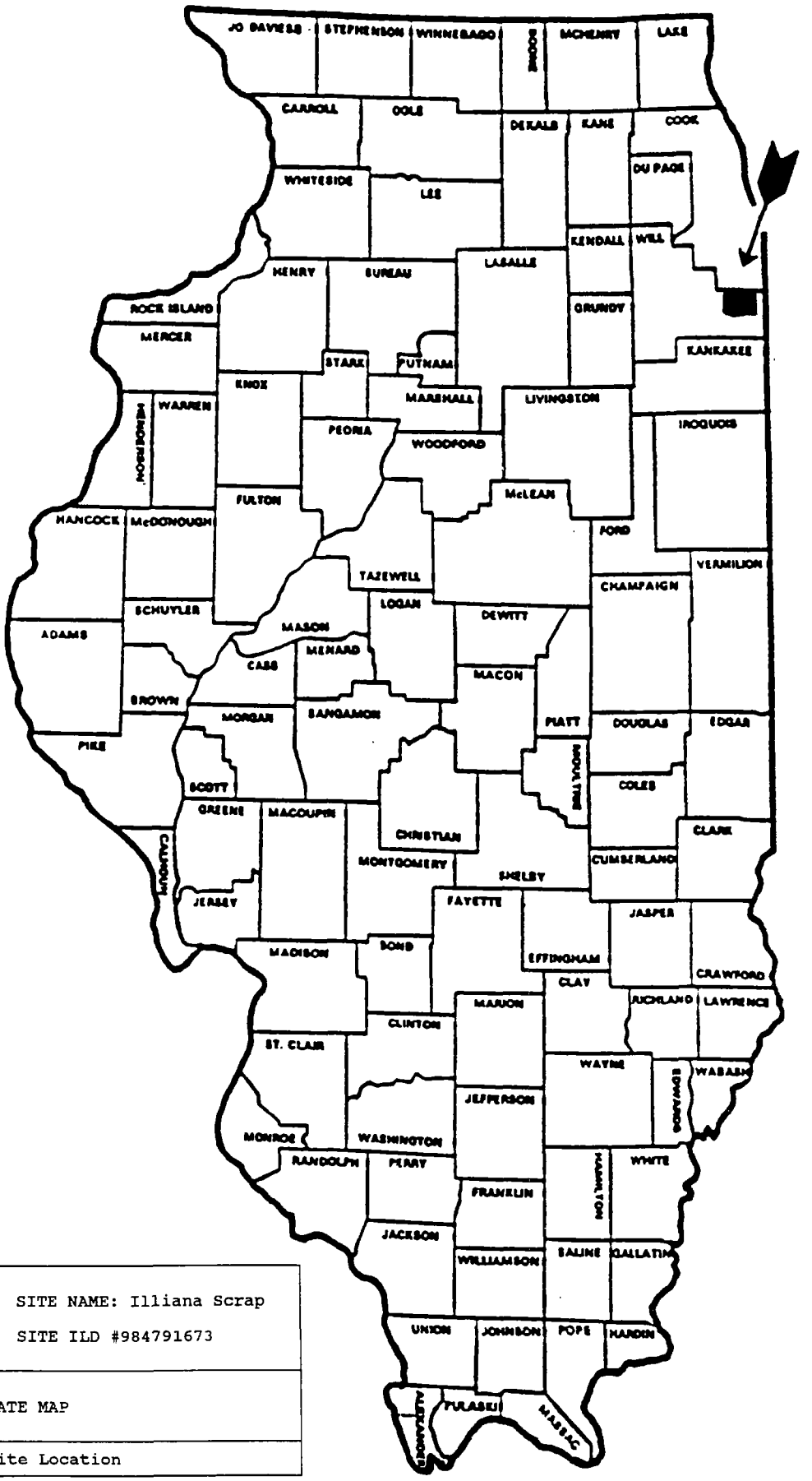
Due to previous industrial practices which have lead to the presence of the documented dioxin contamination at the facility and the surrounding area and the potential for groundwater contamination, the author has assigned a high priority status to this site. It is further recommended that

the USEPA initiate those actions necessary to advance this site to the screening site inspection stage of the CERCLA Pre-remedial process.

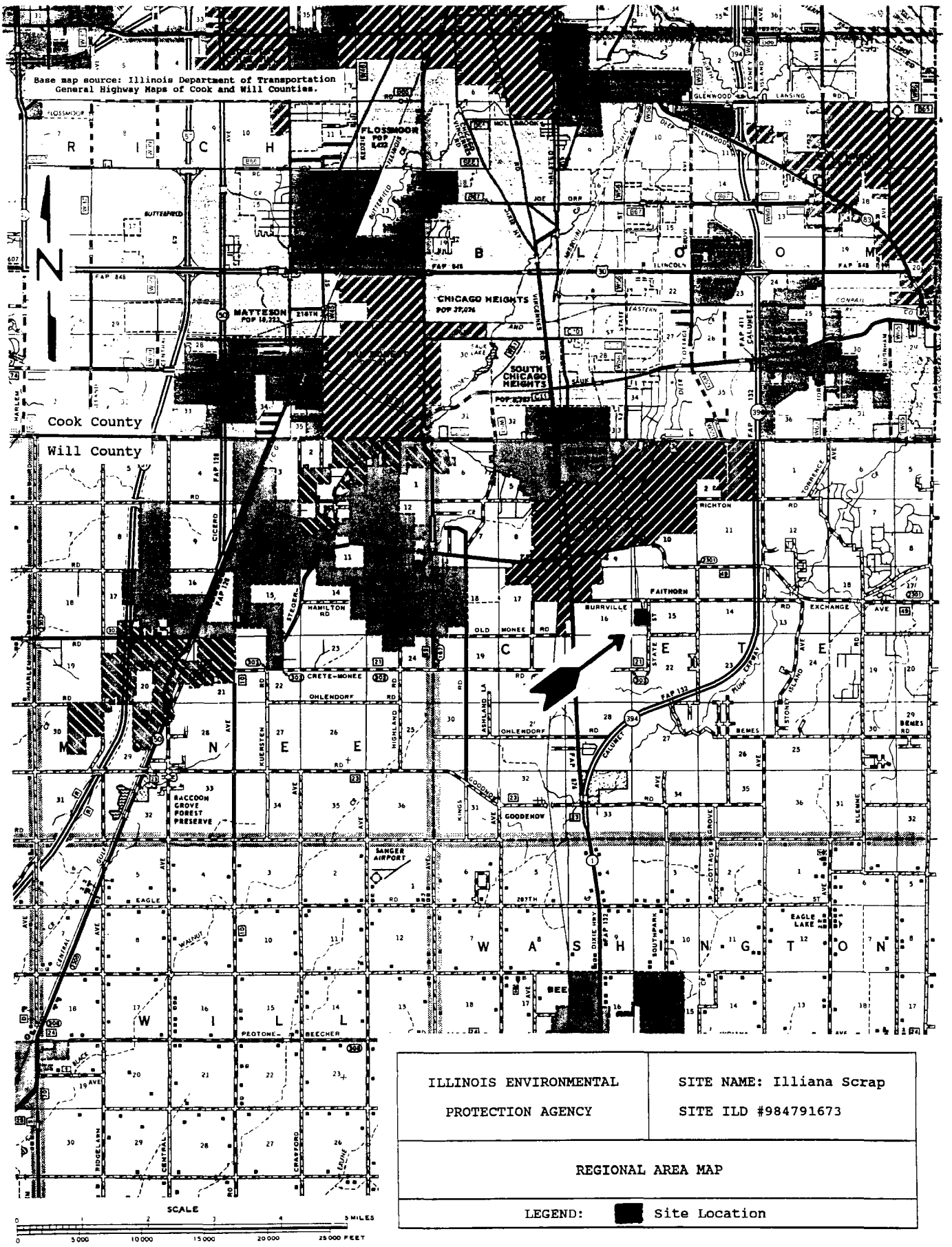
BMF:bmf

SECTION 2

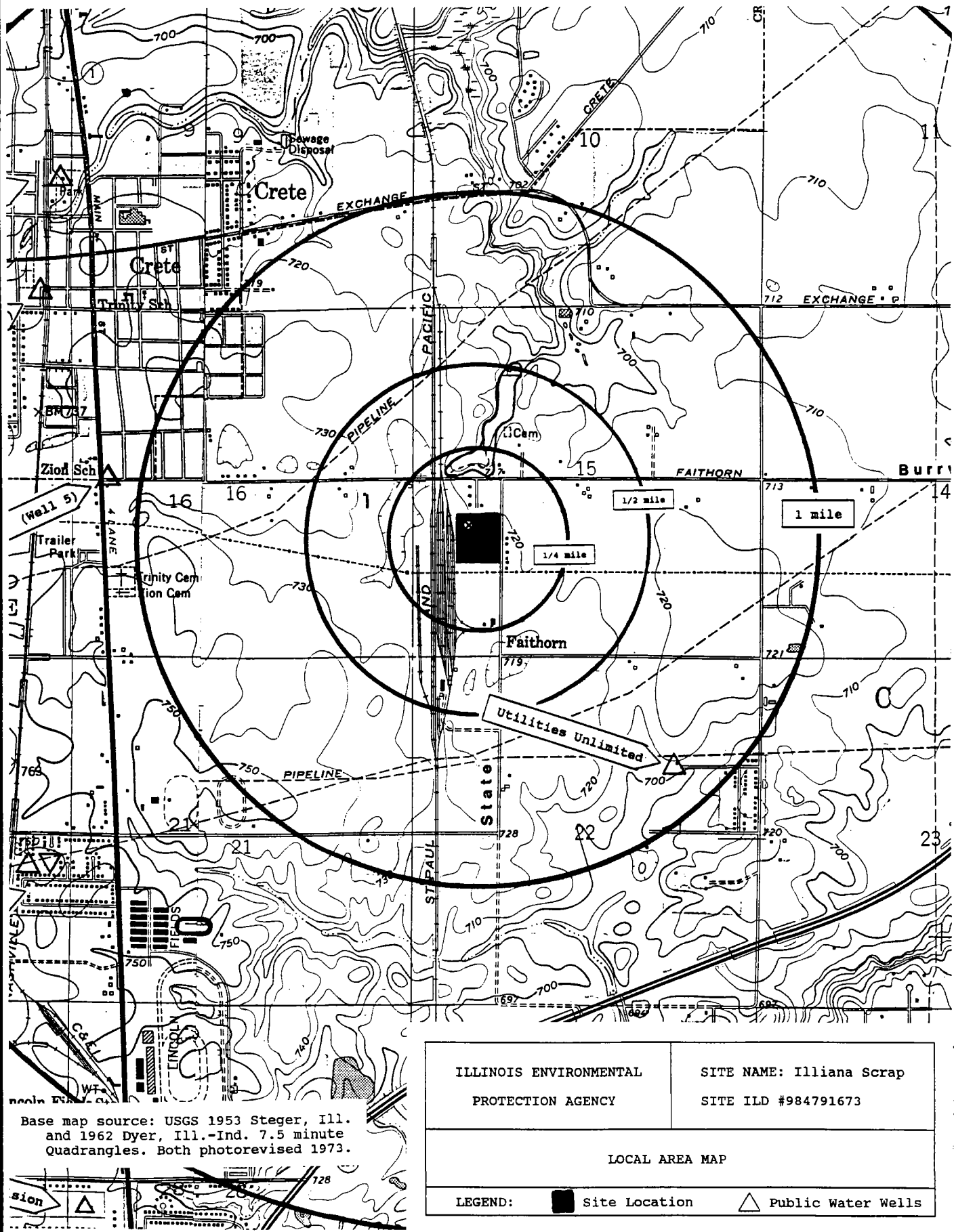
MAPS



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	SITE NAME: Illiana Scrap SITE ILD #984791673
ILLINOIS STATE MAP	
LEGEND: ■ Site Location	



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	SITE NAME: Illiana Scrap SITE ILD #984791673
REGIONAL AREA MAP	
LEGEND: ■ Site Location	



Base map source: USGS 1953 Steger, Ill. and 1962 Dyer, Ill.-Ind. 7.5 minute Quadrangles. Both photorevised 1973.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	SITE NAME: Illiana Scrap SITE ILD #984791673
LOCAL AREA MAP	
LEGEND: ■ Site Location △ Public Water Wells	

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: D984791673

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER				
Illiana Scrap Processing, Inc.	1722 State Street				
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 COUNTY**	**07 COUNTY CODE**	**08 CONG DIST**
Crete	IL	60417	Will	197	02

09 COORDINATES: LATITUDE 41 25 58.0 | LONGITUDE 87 36 34.0 — Dyer, Ill. - Ind. 7.5 min. quad. (56a)

10 DIRECTIONS TO SITE (Starting from nearest public road)
From Illinois State Route 1, turn east on Burville Road near the southern edge of the Crete city limits. Drive 1.15 miles (6100') and turn south onto State Street. Drive approximately 1000' south. The entrance to the facility is located on the west side of the road.

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)			
William E. Ricketts	United Bank of Steger, Tr. #1279			
03 CITY	**04 STATE**	**05 ZIP CODE**	**06 TELEPHONE NUMBER**	
Nacke Road, Crete	IL	60417	( )	
07 OPERATOR (If known and different from owner)	**08 STREET (Business, mailing, residential)**			
Bob Bradley	1722 State Street			
09 CITY	**10 STATE**	**11 ZIP CODE**	**12 TELEPHONE NUMBER**	
Crete	IL	60417	(708 672-5590	

13 TYPE OF OWNERSHIP (Check one)
■ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
■ YES ☐ NO DATE 11 13 90 (MONTH DAY YEAR)
BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ■ C. STATE EPA ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): _____

02 SITE STATUS (Check one)
■ A. ACTIVE ☐ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1974 (BEGINNING YEAR) | N/A (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Dioxins & furans
Automotive batteries with (sulfuric) acid
Soil potentially contaminated with lead and/or PCB's.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Population - direct contact

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
■ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☐ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)			03 TELEPHONE NUMBER
Bill Zenisek	IEPA/DAPC/Maywood			(708) 345-9780
04 PERSON RESPONSIBLE FOR ASSESSMENT	**05 AGENCY**	**06 ORGANIZATION**	**07 TELEPHONE NUMBER**	**08 DATE**
Bruce Ford	IEPA	DLPC/RPMS	(217) 782-6760	04 30 91 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	D984791673

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- [X] A. SOLID
- [ ] B. POWDER, FINES
- [ ] C. SLUDGE
- [X] E. SLURRY
- [ ] F. LIQUID
- [ ] G. GAS
- [ ] D. OTHER _____ (Specify)

02 WASTE QUANTITY AT SITE

(Measures of waste quantities must be independent)

TONS _____

CUBIC YARDS _____

NO. OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- [X] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [X] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [ ] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS	unknown		Dioxins, Furans, PCB's
IOC	INORGANIC CHEMICALS			
ACD	ACIDS	unknown		Battery acid (sulfuric)
BAS	BASES			
MES	HEAVY METALS	unknown		Lead

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Dioxins & Furans	1746016	Incinerator smokestack	≥410	ppt
OCC	PCB's	1336363			
MES	Lead				

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analyses, reports)

USGS Quadrangles
Illinois EPA/DAPC files
USGS Water-Data Report IL-89-2 (Volume 2, Illinois River Basin)
"Will County Soils" University of Illinois Soil Report 80
"Public Groundwater Supplies in Will County" ISWS Bulletin 60-29
"Groundwater Possibilities in Northwestern Illinois" ISGS Circular 198

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	D984791673

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ■ A. GROUNDWATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 36,723
02 □ OBSERVED (DATE: _____) ■ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
With no containment and documented soil contamination, it is very likely that the groundwater could become contaminated. There are 36,723 people who rely on groundwater wells located within four miles of the site.

01 ■ B. SURFACE WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: _____
02 □ OBSERVED (DATE: _____) ■ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
Again with no containment and documented soil contamination, it is very likely that runoff could carry contaminants to surface water. The nearest surface water is approximately 1000 feet downslope from the site.

01 ■ C. CONTAMINATION OF AIR
03 POPULATION POTENTIALLY AFFECTED: 29,501
02 ■ OBSERVED (DATE: 1980) □ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
Based on the dioxin found in an incinerator smokestack on site and the dioxin found in animal tissue eight-tenths of a mile away, it is believed that air releases have occurred.

01 □ D. FIRE/EXPLOSIVE CONDITIONS
03 POPULATION POTENTIALLY AFFECTED: _____
02 □ OBSERVED (DATE: _____) □ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION

01 ■ E. DIRECT CONTACT
03 POPULATION POTENTIALLY AFFECTED: 29,501
02 ■ OBSERVED (DATE: 1980) □ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
The site has no deterrent to entry and is readily accessible. Also note that dioxin contaminated soil on-site has been documented. Also note "C" above.

01 ■ F. CONTAMINATION OF SOIL
03 AREA POTENTIALLY AFFECTED: 11.25+
02 ■ OBSERVED (DATE: 1980) □ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
Soil sampled near the incinerators in August, 1980 was documented as being contaminated with 21 parts per trillion trichlorodibenzodioxin. The area potentially affected may be rather large as the result of an air release(s).

01 ■ G. DRINKING WATER CONTAMINATION
03 POPULATION POTENTIALLY AFFECTED: 36,723
02 □ OBSERVED (DATE: _____) ■ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
See "A" above. Any groundwater contamination is potentially drinking water contamination in this area.

01 ■ H. WORKER EXPOSURE/INJURY
03 WORKERS POTENTIALLY AFFECTED: unknown
02 □ OBSERVED (DATE: _____) ■ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
Based on the soil contamination discussed above in "F", the workers at the site may be exposed to contamination every work day. Note that lead overexposure was suspected in one worker and documented in the blood test of another. The number of workers exposed in the past is unknown.

01 ■ I. POPULATION EXPOSURE/INJURY
03 POPULATION POTENTIALLY AFFECTED: unknown
02 □ OBSERVED (DATE: _____) ■ POTENTIAL □ ALLEGED
04 NARRATIVE DESCRIPTION
The population at risk includes workers at the site, patrons who conduct business at the site, and the general public residing in the area who may have been exposed to an air release.

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: D984791673

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ K. DAMAGE TO FAUNA — 02 ■ OBSERVED (DATE: 1980) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
Dioxin contamination was discovered on the site in an incinerator and in the tissue of a horse from a pasture eight-tenths of a mile away.

01 ☐ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES — 02 ☒ OBSERVED (DATE: 1990) ☒ POTENTIAL ☐ ALLEGED
(Spills/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION The automotive batteries observed in 1990 may *have* leaked or been leaking. No secondary containment, so any leaking acid would have come into contact with the ground. Fluid which may have contained PCB's and was drained directly onto soil in the 1980 period.

01 ■ N. DAMAGE TO OFFSITE PROPERTY — 02 ☒ OBSERVED (DATE: 1980) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
See "K" above. The death of a horse in a stable was damage to the owner's property and business.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
Note the soil contamination described in "F" on the previous page. Two storm drains which flow north from the site to an unknown destination might be/have been contaminated.

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: 36,723

IV. COMMENTS
The incinerators *have* not been in use since mid-1980.

V. SOURCES OF INFORMATION (Cite specific references, e. g., state files, sample analyses, reports)

USGS Quadrangles
Illinois EPA/DAPC files
USGS Water-Data Report IL-89-2 (Volume 2, Illinois River Basin)
"Will County Soils" University of Illinois Soil Report 80
"Public Groundwater Supplies in Will County" ISWS Bulletin 60-29
"Groundwater Possibilities in Northwestern Illinois" ISGS Circular 198

SDMS US EPA Region V

Imagery Insert Form

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4-MILE RADIUS MAP & 15-MILE SURFACE WATER ROUTE MAP

☐ **Other:**

SECTION 3

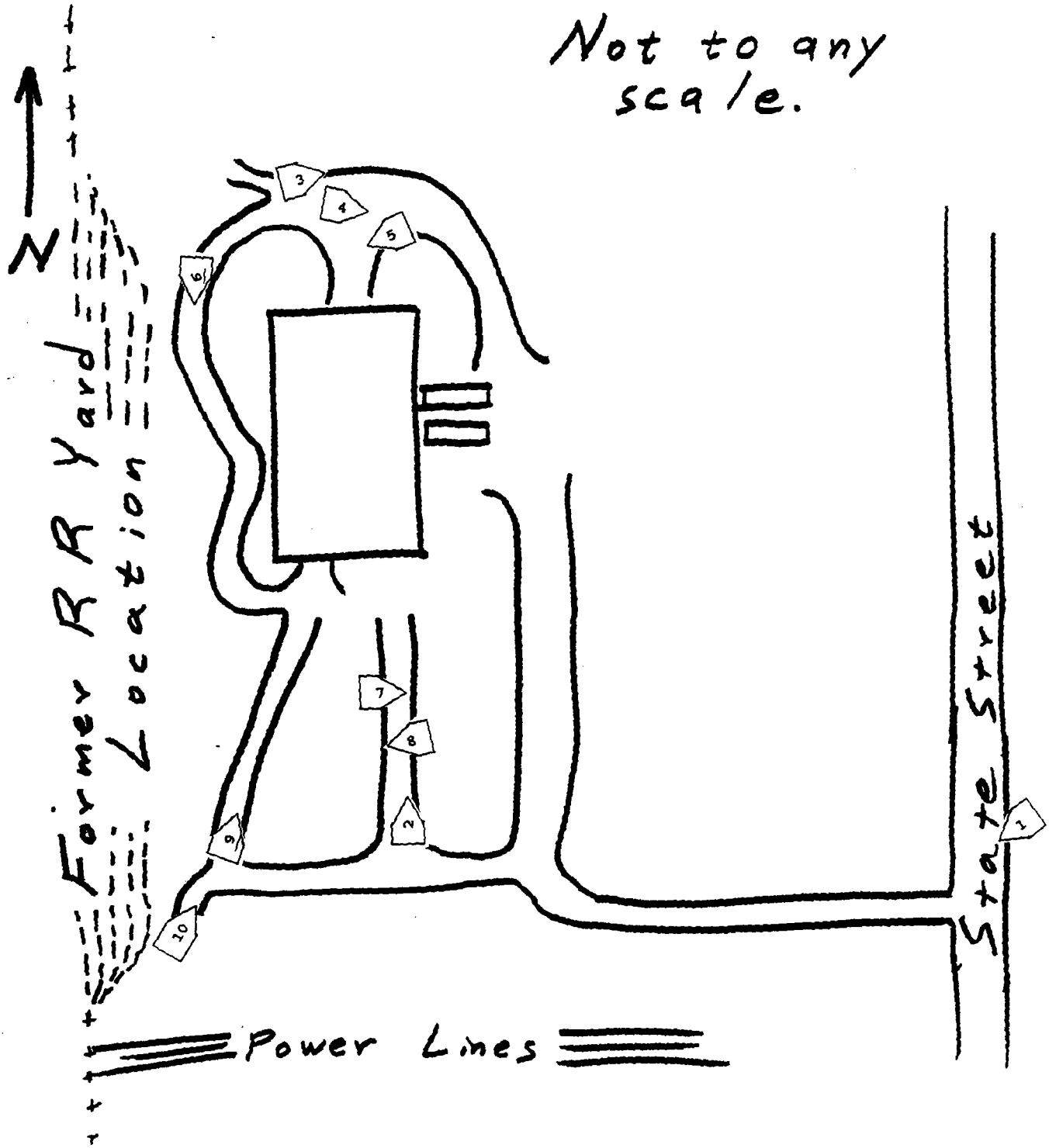
PHOTOGRAPHS

Oblique Angle Photograph

This is a photograph of a photograph which the owner of Illiana Scrap obtained. The original is believed to have been taken during 1989 or 1990. This particular photograph was taken by Bruce Ford at approximately 11:00 AM on November 13, 1990.

The road to the right is State Street which runs north and south. The road at the lower right-hand corner of the photo is the entrance into the facility. The two white trailers visible directly east of the blue building are the offices. Also note the dark brown areas to the left which are the former locations of railroad tracks in a railroad yard. They are also visible directly north and south of the west half of the operating portion of the facility.

Photograph Location Map



Illiana Scrap
ILD 984791673

DATE: November 13, 1990

TIME: 12:15 PM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 1

LOCATION: State Street near the Illiana Scrap entrance (SE corner of facility).

PICTURE TAKEN TOWARD: SW

COMMENTS: The wooden frame (right-center of photo) marks the water well south of the facility.

DATE: November 13, 1990

TIME: 11:45 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 2

LOCATION: Due south of the main building.

PICTURE TAKEN TOWARD: North

COMMENTS: Miscellaneous piles of cardboard and aluminum.

Illiana Scrap
ILD 984791673

DATE: November 13, 1990

TIME: 11:15 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 3

LOCATION: Due north of main building approximately 20 feet.

PICTURE TAKEN TOWARD: E-NE

COMMENTS: General metal trash/debris. Note drum (top, center) and cat (right side of photo).

DATE: November 13, 1990

TIME: 11:20 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 4

LOCATION: Due north of the main building (approx. 20 feet) and offices.

PICTURE TAKEN TOWARD: E-SE

COMMENTS: Boxes of electrical wire visible (right) and drum (center). Note auto batteries (left).

Illiana Scrap
ILD 984791673

DATE: November 13, 1990

TIME: 11:25 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 5

LOCATION: Due north of main building (approximately 20 feet).

PICTURE TAKEN TOWARD: W-SW

COMMENTS: General debris, drums, and aluminum cans. Note the **manhole cover to storm sewer** (foreground).

DATE: November 13, 1990

TIME: 11:30 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 6

LOCATION: Due west (approx 15 feet) of the northwest corner of main building.

PICTURE TAKEN TOWARD: South

COMMENTS: Miscellaneous debris. Some radiators (foreground) and plastic cola containers (middle).

Illiana Scrap
ILD 984791673

DATE: November 13, 1990

TIME: 11:40 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 7

LOCATION: Several feet due south of main building.

PICTURE TAKEN TOWARD: East

COMMENTS: Miscellaneous debris. Rolls of aluminum (foreground). Note drum (center of photograph).

DATE: November 13, 1990

TIME: 11:40 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 8

LOCATION: South of the main building.

PICTURE TAKEN TOWARD: W-SW

COMMENTS: Piles of clear and colored glass to be recycled. Note automotive battery on pallet (right).

Illiana Scrap
ILD 984791673

DATE: November 13, 1990

TIME: 11:50 AM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 9

LOCATION: South of main building near southern portion of the facility.

PICTURE TAKEN TOWARD: N-NE

COMMENTS: The **incinerator furnace** discovered is visible silhouetted against the blue building Rusted machinery (center) is an old crusher/binder ruined by fire.

DATE: November 13, 1990

TIME: 12:00 PM

PHOTOGRAPH TAKEN BY:

Bruce Ford

PHOTOGRAPH NUMBER: 10

LOCATION: Southwest corner of the facility (in the old railroad yard).

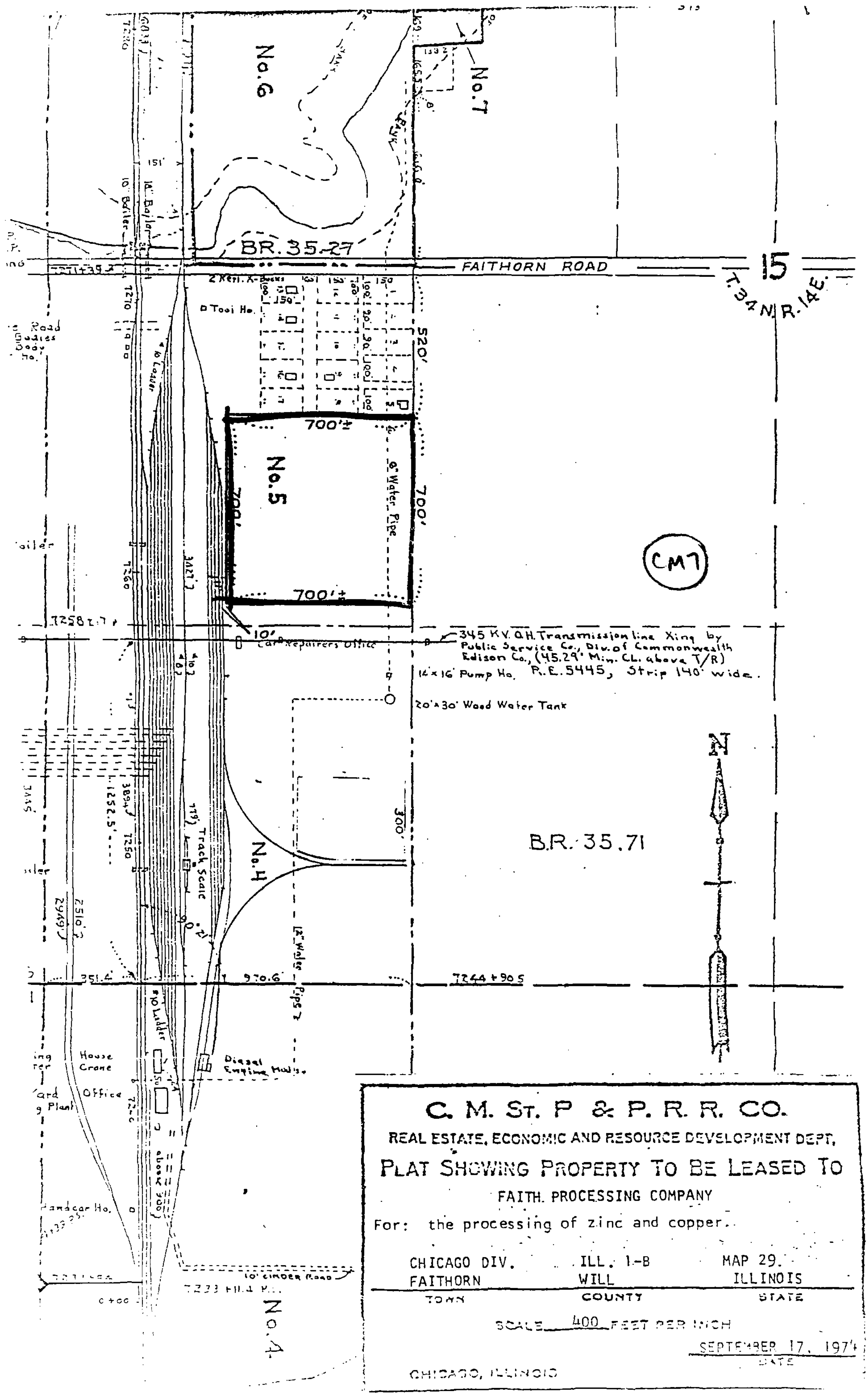
PICTURE TAKEN TOWARD: NE

COMMENTS: General photo of debris. The **incinerator furnace** is visible (just right of blue building).

SECTION 4

SUPPORTING DOCUMENTATION/REFERENCES

Reference I



C. M. St. P & P. R. R. CO.

REAL ESTATE, ECONOMIC AND RESOURCE DEVELOPMENT DEPT.

PLAT SHOWING PROPERTY TO BE LEASED TO

FAITH. PROCESSING COMPANY

For: the processing of zinc and copper.

CHICAGO DIV.	ILL. 1-B	MAP 29.
FAITHORN	WILL	ILLINOIS
TOWN	COUNTY	STATE

SCALE 400 FEET PER INCH

SEPTEMBER 17, 1974
DATE

CHICAGO, ILLINOIS

Reference II

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: April 23, 1980

TO: Sy Levine WZ

FROM: William Zenisek

SUBJECT: Crete Metals
Crete, Illinois
ID# 197 801 AAC

On this date, I spoke with Mr. Henderson about Crete Metals. Mr. Henderson is an Industrial Hygienist with the U.S. Dept of Labor (Telephone 896-8700). He stated that he visited the plant this week and he was of the opinion that the foreman, Mr. Earl Nilsen may have symptoms of lead overexposure.

Mr. Henderson requested to be notified in the event that the plant should resume operations.

WZ/sl

cc: Miles Zamco
Peter Orlinsky
Steve Grossmark
Region I File

Reference III

ILLINOIS EPA
Environmental Protection Agenc
48 W. Galena Aurora, IL. 60506
DIVISION OF PUBLIC WATER SUPPLIES
TELEPHONE 312-896-5001

August 13, 1980

Crete (Private Wells) Will County

Mr. Bill Withrow
Illinois Environmental Protection Agency
Division of Air Pollution Control
1701 South First Street
Maywood, Illinois 60153

Dear Mr. Withrow:

Enclosed please find copies of mineral and organic analysis results of water samples collected from different private wells in the Village of Crete.

We understand these analyses were performed to determine if the water supply in the area was contaminated through the air as a result of an incident of excessive air pollution.

Except for Iron and Total solids which was quite high in some samples, there were no abnormal values beyond the Maximum Contaminant Level for public water supplies.

If you should have any questions, please contact us.

Very truly yours,

ENVIRONMENTAL PROTECTION AGENCY

Emmanuel Abad, EPE
Division of Public Water Supplies

EA:rnw
cc: Springfield
File

MINERAL ANALYSIS REPORT FORM
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Mail Report To [illegible]	To Be Sampled During: Public Water Supply
Address [illegible]	County
	Facility Number
Post Office State Zip Code	Name of Collector [illegible]
Supply: Surface Well #1 Raw ✓ Finished	Telephone Number [illegible]
Sampling Point [illegible] Date Collected	Region
Well Supply: Well Number Depth	Year Drilled
Well Pumped Hours At	GPM Before Sample Collected
Surface Supply: Source Water Inlet	Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	5.	Fluoride	F	F	0.24
Manganese	Mn	Mn	0.08	Chloride	Cl	Cl	34.
Calcium	Ca	Ca	~~158.~~ 161.	Nitrate	NO_3	NO_3	<0.4
Magnesium	Mg	Mg	~~76.~~ 71.	Sulfate	SO_4	SO_4	466.
Ammonium	NH_4	NH_4	[illegible]	Alkalinity		$CaCO_3$	[illegible]
Sodium	Na	Na	~~55.~~ 51.	Spec. Cond. (mmhos/cm)			1270.
Potassium	K	K	3.2	TDS/EC			760.
Silica	Si	SiO_2	17.	Residue on Evaporation			1050.
Arsenic	As	As	0.001	pH		pH Units	7.2
Barium	Ba	Ba	0.04	Hardness		$CaCO_3$	[illegible]
Boron	B	B	0.27	Nickel	Ni	Ni	<0.005
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.005	Zinc	Zn	Zn	0.43
Lead	Pb	Pb	0.02	Cyanide	CN	CN	[illegible]
Mercury (µg/l)	Hg	Hg	<0.05				

Be <0.0001	V <0.005
Co <0.005	Al
Li 0.20	
Sr 0.17	

Laboratory Use Only

Pls. test [illegible]

Laboratory Number B 47835

Date Received MAY 5 1980 3pm By [illegible]

Date Reviewed By

Date Forwarded MAY 22 1980

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. [illegible]
Date Recd. MAY 7 [illegible]

FILL IN ALL INFORMATION COMPLETELY

CITY: [illegible]
COUNTY: [illegible]

MAIL REPORT TO: [illegible]
STREET:
POST OFFICE: [illegible]
ZIP CODE: [illegible]

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:
COLLECTED BY [illegible]

DATE OF COLLECTION: [illegible]
COLLECTION POINT: [illegible]

Lindane	<.01 ug/l
Heptachlor	<.01
Aldrin	<.01
Heptachlor Epoxide	<.01
Alpha Chlordane	<.01
Gamma Chlordane	<.01
Dieldrin	<.01
Endrin	<.01
Methoxychlor	<1.0
o,p' -DDE	<.01
p,p' -DDE	<.01
o,p' -DDD	<.01
p,p' -DDD	<.01
o,p' -DDT	<.01
p,p' -DDT	<.01
Toxaphene	<1.0
Others PCBs	< 0.1 Not detected

Reported From Lab. 5/6/80 By: [illegible signature]

Transported by ES ASAP

DLE:2/1'74

Received by [illegible]

MINERAL ANALYSIS REPORT FORM
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

To Be Sampled During:

Mail Report To: [illegible]

Public Water Supply:

County:

Address: [illegible]

Facility Number:

Post Office: [illegible] State: [illegible] Zip Code:

Name of Collector: [illegible]

Supply: Surface Well Raw Finished

Telephone Number:

Sampling Point: [illegible] Date Collected: Region:

Well Supply: Well Number Depth Year Drilled

Well Pumped Hours At GPM Before Sample Collected

Surface Supply: Source Water Inlet Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	2.7	Fluoride	F	F	0.20
Manganese	Mn	Mn	0.04	Chloride	Cl	Cl	6.1
Calcium	Ca	Ca	~~68.~~ 66.	Nitrate	NO_3	NO_3	<0.4
Magnesium	Mg	Mg	~~52.~~ 49.	Sulfate	SO_4	SO_4	142.
Ammonium	NH_4	NH_4	<0.1	Alkalinity		$CaCO_3$	[illegible]
Sodium	Na	Na	15.	Spec. Cond. (mmhos/cm)			650.
Potassium	K	K	2.1	TDS/EC			390.
Silica	Si	SiO_2	16.	Residue on Evaporation			448.
Arsenic	As	As	<0.0005	pH		pH Units	7.4
Barium	Ba	Ba	0.04	Hardness		$CaCO_3$	[illegible]
Boron	B	B	0.02	Nickel	Ni	Ni	<0.005
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.05	Zinc	Zn	Zn	0.27
Lead	Pb	Pb	<0.005	Cyanide	CN	CN	<0.005
Mercury (μg/l)	Hg	Hg	<0.05				

Be <0.0001	V <0.005
Co <0.005	Al
Li 0.08	
Sr 0.08	

Please test As. [illegible]

Laboratory Use Only

[illegible] 6-10-88

Laboratory Number B 47837

Date Received MAY 5 1988 3PM By [illegible]

Date Reviewed By

Date Forwarded MAY 2? 1988

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. [illegible]
Date Recd. MAY 7 19 80

FILL IN ALL INFORMATION COMPLETELY

CITY:
COUNTY:

MAIL REPORT TO:
STREET:
POST OFFICE:
ZIP CODE:

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:

COLLECTED BY C. ARND

DATE OF COLLECTION:

COLLECTION POINT:

Lindane	<.01 mg/l ppb
Heptachlor	<.01
Aldrin	<.01
Heptachlor Epoxide	<.01
Alpha Chlordane	<.01
Gamma Chlordane	<.01
Dieldrin	<.01
Endrin	<.01
Methoxychlor	<1.0
o,p' -DDE	<.01
p,p' -DDE	<.01
o,p' -DDD	<.01
p,p' -DDD	<.01
o,p' -DDT	<.01
p,p' -DDT	<.01
Toxaphene	<1.0

Others PCBs were not detected in these samples. Trace levels of organics were detected in these samples. The concentrations were estimated to be less than 2 ug/l for those compounds that were detected.

Reported From Lab. 8/6/80 By: J Hurley

Transported by ES 4513

DLB:2/1/74

Received by C.A.

MINERAL ANALYSIS REPORT FORM
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Mail Report To EPA [illegible]

Address [illegible]

Post Office [illegible] State [illegible] Zip Code [illegible]

Supply: Surface Well Raw Finished

To Be Sampled During

Public Water Supply

County [illegible]

Facility Number

Name of Collector [illegible]

Telephone Number [illegible]

Sampling Point [illegible] Date Collected [illegible] Region

Well Supply: Well Number Depth Year Drilled

Well Pumped Hours At GPM Before Sample Collected

Surface Supply: Source Water Inlet Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	1.6	Fluoride	F	F	0.26
Manganese	Mn	Mn	<0.005	Chloride	Cl	Cl	10.
Calcium	Ca	Ca	~~102.~~ 98.	Nitrate	NO_3	NO_3	<0.4
Magnesium	Mg	Mg	~~52.~~ 49.	Sulfate	SO_4	SO_4	76.
Ammonium	NH_4	NH_4	0.1	Alkalinity		$CaCO_3$	[illegible]
Sodium	Na	Na	9.	Spec. Cond. (mmhos/cm)			770.
Potassium	K	K	2.8	TDS/EC			460.
Silica	Si	SiO_2	19.	Residue on Evaporation			493.
Arsenic	As	As	0.001	pH		pH Units	7.2
Barium	Ba	Ba	0.09	Hardness		$CaCO_3$	[illegible]
Boron	B	B	0.07	Nickel	Ni	Ni	<0.005
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.005	Zinc	Zn	Zn	0.08
Lead	Pb	Pb	<0.005	Cyanide	CN	CN	[illegible]
Mercury (µg/l)	Hg	Hg	<0.05				

Be	<0.0001	V	<0.005
Co	<0.005	Al	
* Li	0.13		
Sr	0.21		

Pls. test its seem its possible

Laboratory Use Only

Laboratory Number P 47839

MAY 5 1980

Date Received _____ By [illegible]

Date Reviewed _____ By _____

Date Forwarded [illegible]

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. [illegible]
Date Recd. [illegible]

FILL IN ALL INFORMATION COMPLETELY

CITY:
COUNTY:

MAIL REPORT TO:
STREET:
POST OFFICE:
ZIP CODE:

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:
COLLECTED BY

DATE OF COLLECTION:
COLLECTION POINT:

Lindane	<.01 ug/l
Heptachlor	<.01
Aldrin	<.01
Heptachlor Epoxide	<.01
Alpha Chlordane	<.01
Gamma Chlordane	<.01
Dieldrin	<.01
Endrin	<.01
Methoxychlor	<1.0
o,p' -DDE	<.01
p,p' -DDE	<.01
o,p' -DDD	<.01
p,p' -DDD	<.01
o,p' -DDT	<.01
p,p' -DDT	<.01
Toxaphene	<1.0

Others PCBs <.1 Not detected
Trace levels of organics were detected in these samp
The concentrations were estimated to be less than

Reported From Lab. 5/6/80 By: J Hanley

Transported by SIS [illegible]
DLE:2/1'74
Recvd [illegible]

MINERAL ANALYSIS REPORT FORM
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

To Be Sampled During

Mail Report To: EPA [illegible]

Address: [illegible]

Post Office: [illegible] State: [illegible] Zip Code

Public Water Supply

County: [illegible]

Facility Number

Name of Collector: [illegible]

Telephone Number: [illegible]

Supply: Surface Well Raw Finished

Sampling Point: Mrs. [illegible] Date Collected Region

Well Supply: Well Number Depth Year Drilled

Well Pumped Hours At GPM Before Sample Collected

Surface Supply: Source Water Inlet Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	1.6	Fluoride	F	F	0.26
Manganese	Mn	Mn	<0.005	Chloride	Cl	Cl	10.
Calcium	Ca	Ca	~~102.~~ 98.	Nitrate	NO_3	NO_3	<0.4
Magnesium	Mg	Mg	~~52.~~ 49.	Sulfate	SO_4	SO_4	76.
Ammonium	NH_4	NH_4	0.1	Alkalinity		$CaCO_3$	[illegible]
Sodium	Na	Na	9.	Spec. Cond. (mmhos/cm)			770.
Potassium	K	K	2.8	TDS/EC			460.
Silica	Si	SiO_2	19.	Residue on Evaporation			493.
Arsenic	As	As	0.001	pH		pH Units	7.2
Barium	Ba	Ba	0.09	Hardness		$CaCO_3$	46[illegible]
Boron	B	B	0.07	Nickel	Ni	Ni	<0.005
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.005	Zinc	Zn	Zn	0.08
Lead	Pb	Pb	<0.005	Cyanide	CN	CN	[illegible]
Mercury (µg/l)	Hg	Hg	<0.05				

Be <0.0001	V <0.005
Co <0.005	Al
Li 0.13	
Sr 0.21	

Pls. test As soon as possible

Laboratory Use Only

Laboratory Number R 47839

Date Received MAY 5 1980 By [illegible]

Date Reviewed By

Date Forwarded [illegible]

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. [illegible]
Date Recd. MAY 7 1980

CITY: [illegible]
COUNTY: [illegible]

FILL IN ALL INFORMATION COMPLETELY

MAIL REPORT TO: [illegible]
STREET:
POST OFFICE: [illegible]
ZIP CODE: [illegible]

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:
COLLECTED BY [illegible]

DATE OF COLLECTION: [illegible]
COLLECTION POINT: [illegible]

Lindane <.01
Heptachlor <.01
Aldrin <.01
Heptachlor Epoxide <.01
Alpha Chlordane <.01
Gamma Chlordane <.01
Dieldrin <.01
Endrin <.01
Methoxychlor <1.0
o,p' -DDE <.01
p,p' -DDE <.01
o,p' -DDD <.01
p,p' -DDD <.01
o,p' -DDT <.01
p,p' -DDT <.01
Toxaphene <1.0
Others PCBs <0.1 ug/l Not detected

Reported From Lab. 8/1/80 By: J. Henley

Transported by SS ABAP
DLB:2/1974
Received by [illegible]

MINERAL ANALYSIS REPORT FORM
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Mail Report To: EPA Region II PWS	To Be Sampled During: Public Water Supply
Address: 4R W. Galena	County: WILL
Post Office: Aurora; State: ILL; Zip Code: 60506	Facility Number
Supply: Surface; Well; Raw ✓; Finished	Name of Collector: E. ABAD
	Telephone Number: 896-8001

Sampling Point: Hand Pump Well - Pres. Bonner Res.	Date Collected: 5/2/80 12:00	Region
Well Supply: Well Number	Depth: 30' (11' to surface)	Year Drilled
Well Pumped	Hours At	GPM Before Sample Collected
Surface Supply: Source	Water Inlet	Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	0.40	Fluoride	F	F	0.18
Manganese	Mn	Mn	0.02	Chloride	Cl	Cl	13.
Calcium	Ca	Ca	93.	Nitrate	NO_3	NO_3	12.
Magnesium	Mg	Mg	43.	Sulfate	SO_4	SO_4	192.
Ammonium	NH_4	NH_4	<0.1	Alkalinity		$CaCO_3$	186.
Sodium	Na	Na	9.	Spec. Cond. (mmhos/cm)			750.
Potassium	K	K	1.1	TDS/EC			450.
Silica	Si	SiO_2	9.9	Residue on Evaporation			505.
Arsenic	As	As	<0.0005	pH		pH Units	7.5
Barium	Ba	Ba	0.04	Hardness		$CaCO_3$	410
Boron	B	B	0.07	Nickel	Ni	Ni	0.01
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.005	Zinc	Zn	Zn	0.53
Lead	Pb	Pb	<0.005	Cyanide	CN	CN	<0.005
Mercury (μg/l)	Hg	Hg	<0.05				

Be <0.0001	V <0.005
Co <0.005	Al
*U Li 0.12	
Sr 0.15	

Pls. test As soon As possible

Laboratory Use Only

MTB 5-28-80 ✓

Laboratory Number B 47836

Date Received MAY 5 1980 3pm By [illegible]

Date Reviewed MAY 19 1980 By

Date Forwarded ~~MAY 9 1980~~ [illegible stamp]

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. DOI[illegible]
Date Recd. MAY 7 1980

FILL IN ALL INFORMATION COMPLETELY

CITY:
COUNTY:

MAIL REPORT TO:
STREET:
POST OFFICE:
ZIP CODE:

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:

COLLECTED BY E. ABAY

DATE OF COLLECTION:

COLLECTION POINT:

Lindane	<.01 mg/l
Heptachlor	<.01
Aldrin	<.01
Heptachlor Epoxide	<.01
Alpha Chlordane	<.01
Gamma Chlordane	<.01
Dieldrin	<.01
Endrin	<.01
Methoxychlor	<1.0
o,p' -DDE	<.01
p,p' -DDE	<.01
o,p' -DDD	<.01
p,p' -DDD	<.01
o,p' -DDT	<.01
p,p' -DDT	<.01
Toxaphene	<1.0
Others PCB2	<0.1 Not detected

Reported From Lab. 5/1/80 By: J. Hurley

Transported by ES ABAY

DLE: 2/1/74

Record by AT

MINERAL ANALYSIS REPORT FOR
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Mail Report To EPA - Region [illegible]	To Be Sampled During: Public Water Supply
Address [illegible]	County
Post Office / State / Zip Code	Facility Number
Supply: Surface / Well / Raw / Finished	Name of Collector E. ARAD
	Telephone Number [illegible]
Sampling Point Hot Water Tap [illegible]	Date Collected / Region
Well Supply: Well Number	Depth / Year Drilled
Well Pumped / Hours At	GPM Before Sample Collected
Surface Supply: Source	Water Inlet / Feet Below Surface

Parameter	Symbol	Reported As	mg/l*	Parameter	Symbol	Reported As	mg/l*
Iron	Fe	Fe	0.96	Fluoride	F	F	0.27
Manganese	Mn	Mn	0.005	Chloride	Cl	Cl	49.
Calcium	Ca	Ca	3.5	Nitrate	NO_3	NO_3	<0.4
Magnesium	Mg	Mg	24.	Sulfate	SO_4	SO_4	470.
Ammonium	NH_4	NH_4	<0.1	Alkalinity		$CaCO_3$	351.
Sodium	Na	Na	390.	Spec. Cond. (mmhos/cm)			1640.
Potassium	K	K	1.1	TDS/EC			980.
Silica	Si	SiO_2	10.	Residue on Evaporation			1130.
Arsenic	As	As	<0.0005	pH		pH Units	9.3
Barium	Ba	Ba	0.01	Hardness		$CaCO_3$	69.
Boron	B	B	0.32	Nickel	Ni	Ni	<0.005
Cadmium	Cd	Cd	<0.0005	Selenium	Se	Se	<0.0005
Chromium (Total)	Cr	Cr	<0.005	Silver	Ag	Ag	<0.005
Copper	Cu	Cu	<0.005	Zinc	Zn	Zn	0.09
Lead	Pb	Pb	<0.005	Cyanide	CN	CN	<0.005
Mercury (µg/l)	Hg	Hg	<0.05				

Be <0.0001	V <0.005	Laboratory Use Only
Co <0.005	Al	
*U Li <0005		
Sr <0.005		

Please test for [illegible]

Laboratory Number B 17830

Date Received MAY 5 1980 By [illegible]

Date Reviewed [illegible] By [illegible]

Date Forwarded MAY 22 1980

PWS-31

WATER ANALYSIS REPORT FORM
(PESTICIDE)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF PUBLIC WATER SUPPLIES

Lab. No. [illegible]
Date Recd. MAY 7 1980

FILL IN ALL INFORMATION COMPLETELY

CITY:
COUNTY: Will

MAIL REPORT TO:
STREET:
POST OFFICE:
ZIP CODE:

NAME OF SUBDIVISION, INSTITUTION, STATE PROPERTY:

COLLECTED BY

DATE OF COLLECTION:

COLLECTION POINT:

Lindane	<.01
Heptachlor	<.01
Aldrin	<.01
Heptachlor Epoxide	<.01
Alpha Chlordane	<.01
Gamma Chlordane	<.01
Dieldrin	<.01
Endrin	<.01
Methoxychlor	<1.0
o,p' -DDE	<.01
p,p' -DDE	<.01
o,p' -DDD	<.01
p,p' -DDD	<.01
o,p' -DDT	<.01
p,p' -DDT	<.01
Toxaphene	<1.0
Others PCBs	<0.1 Not detected

Reported From Lab. 5/6/80 By: J Hurley

Transported by CS EBAP
DLB:2/1/74
Received by [illegible]

Reference IV

WILL COUNTY HEALTH DEPARTMENT
501 ELLA AVENUE · JOLIET, ILLINOIS 60433 · 815/727-8480
JAMES C. BARRINGER, Health Director

PUBLIC HEALTH NURSING DIVISION
(815) 727-8500

May 16, 1980

Mr. Bill Withrow
Illinois Environmental Protection Agency
1701 First Avenue
Maywood, IL 60153

Dear Mr. Withrow:

Enclosed are copies of the blood leads that were drawn on both the father, Mr. Jesus Becerra, and his eleven year old son.

The last time we spoke to Mr. Becerra, he did say that he would continue to work with Crete Metals until such time as his employer would move him up to the Chicago operation. He anticipates that this would be some time this summer.

I am enclosing copies of these blood reports as per your request. It appears that both the father and the child have blood lead levels above the normal of 10-30mg/dl. We will be contacting them with regards to participating in the University of Illinois study.

Should you wish additional information, please do not hesitate to call.

Very truly yours,

B. Jaquez, R.N.
Director of Nursing

Encl.
cc: Dr. Hryhorczuk
BJ:kag

ACCOUNT NO. G0033

LAB. ACCESSION NO. 47537

CONTROL NO. 154137

RECEIVED MO. 5 DAY 12

1L. TBLd - 1G TBLd

LAST NAME JESUS BECERRA | INITIALS | AGE | SEX ☐ F ☐ M

DRAWN MO. | DAY | HR. | ☐ AM ☐ PM

IDENTIFICATION NO. AND/OR REMARKS

TEST	TEST NAME & SPECIMEN
2490	LEAD
2670	MERCURY
0920	CADMIUM

ANALYSIS REPORT

MO. 5 DAY 13 $35.00

National Medical Services, Inc.
2300 Stratford Avenue
Willow Grove, Pa. 19090
Tel. (215) 657-4900

Fredric Rieders, Ph.D.
LABORATORY DIRECTOR

Mercury: 0.9 micrograms/dL Blood
Normal: 0.2 – 4.8 micrograms/dL
Cadmium: 0.2 micrograms/dL bld
Normal: 0.3 – 6 micrograms/dL bld
Lead: 37 micrograms/dL Blood
Normal: 12-30 µg/dl Blood

Child

ACCOUNT NO.	LAB. ACCESSION NO.	NMS	LAST NAME	INITIALS	AGE	SEX
G0033	47538		JOSE BECERRA			☐ F ☐ M

CONTROL NO. 154135

RECEIVED MO. 5 DAY 12

DRAWN MO. DAY HR. ☐ AM ☐ PM

IDENTIFICATION NO. AND/OR REMARKS

IL.T.Bld -2G.T.Bld

TEST NO.	TEST NAME & SPECIMEN
2070	MERCURY
2490	Lead
0920	CADMIUM

ANALYSIS REPORT

MO. 5 DAY 13 #357

Mercury: 1.2 micrograms/dL Blood

Normal 0.4 -4.8 micrograms/dL

Cadmium: 0.3 micrograms/dL blood

Normal: 0.3 - 6 micrograms/dL bld

Lead: 32 micrograms/dL Blood

Normal 10-30 µg/dL Blood

National Medical Services, Inc.
2300 Stratford Avenue
Willow Grove, Pa. 19090
Tel. (215) 657-4900

Fredric Rieders, Ph.D.
LABORATORY DIRECTOR

Reference V

THE MEDICAL COLLEGE OF WISCONSIN, INC.
8701 WATERTOWN PLANK ROAD
WAUWATOSA WISCONSIN 53226

Department of Anatomy

June 5, 1980

Reply to: P. O. Box 26509
Milwaukee, Wisconsin 53226
(414) 257-8261

Val R. Beasley, DVM
College of Veterinary Medicine
Laboratories of Veterinary
Diagnostic Medicine
Veterinary Medicine Annex
Urbana, IL 61801

RE: Case Number D80-3945

Dear Dr. Beasley,

Analysis of the lung and trachea was done using energy dispersive X-ray analysis in the scanning electron microscope. Eight analyses, of each, tissue, were done at magnificstions of between 100X and 1000X. Spectra of areas one and four are enclosed.

The lung sections showed extremely high levels of silicon in isolated areas. Since the high Si levels were in very isolated areas and there was no fibrosis, I do not think this element is significant. Other elements, not normal to the lung, were present in smaller amounts. These include Al, Pd, Ti, and Ag. Both copper and iron levels, usually common in lung, were above normal in some of the areas. This may be due to a high Fe or Cu content of the soil in this area.

An analysis of particles in one small area of the lung showed (area four) high Al and Si levels and smaller amounts of Ag. Since Ag and Pd are not normal consitituents of soil it is my opinion that the chickens were

exposed to toxic levels of atmospheric Ag and Pd particals or to soil dust contaminated with these elements.

Our energy dispersive X-ray analysis was not able to identify Mo or Pb because of sulphur peak interference. This indicates an absence of high levels of these elements, but smaller still dangerous levels of these elements could still be present. If you would like us to analyze for these two elements we would have to use wavelength dispersive analysis. This would cost an additional $200 because of the long times involved.

The trachea revealed less in foreign elements but one area did show a small trace of Ag.

Our laboratory can identify calcium oxalate crystals. The calcium-oxygen compounds can be identified using wave length dispersive analysis or specific calcium oxalate can be identified by using electron diffraction methods.

Yours very truly,

Kenneth A. Siegesmund, PhD
Associate Professor of Anatomy

Reference VI

University of Illinois at Urbana-Champaign

College of Veterinary Medicine
LABORATORIES OF VETERINARY
DIAGNOSTIC MEDICINE

Veterinary Medicine Annex
Urbana, Illinois 61801
(217) 333-1620

July 2, 1980

To Whom It May Concern:

A female horse, identified by the name Allea, belonging to Rita Battenhauser of near Crete, IL was brought in for necropsy arriving at approximately 11:00 p.m. on June 18, 1980. The horse had reportedly died during transport and the owner stated that her veterinarian, Dr. O'Brien had diagnosed an impacted cecum, and shock and suggested that the prognosis was grave.

The horse was unloaded at the diagnostic lab at approximately 11:50 a.m. and a post-mortem examination commenced at 1:00 p.m. and completed at approximately 4:30 p.m..

Specimens taken for analysis included periorbital fat, bone marrow, ½ brain, liver, kidney, and intestinal contents. Specimens collected for organic compound identification were wrapped in methylene chloride rinsed aluminum foil. Tissues for metals analysis were put into plastic specimen bags. Both groups of tissues were at that time frozen and kept in the freezer of the Laboratories of Diagnostic Veterinary Medicine of the University of Illinois at Urbana-Champaign. Nothing was added to the tissues. All shipping, except to Dr. Bruce, was by United Parcel Service.

Specimens of brain and fat and bone marrow were sent to the Illinois Department of Public Health Laboratory, 2121 W. Taylor Street, Chicago, IL 60612 on June 23, 1980.

Portions of liver and kidney were sent to the Public Health Diagnostic Laboratory, 134 N. Ninth Street, Springfield, IL 62706, also on June 23, 1980.

Specimens of kidney, liver, fat and brain were submitted on June 28, 1980 to Dr. Bill Bruce for insecticide analysis, by our own carrier. His address is 229 Natural Resources Study Annex, University of Illinois at Urbana, Urbana, IL 61801.

Cordially,

Val R. Beasley

Val R. Beasley

cc: Dr. Bill Bruce
Carolyn Hesse
IL Dept. of Public Health Laboratory
Public Health Diagnostic Laboratory

Reference VII

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: June 27, 1980

TO: Sy Levine, Region I Manager, FOS/DAPC

FROM: Kerry Keller, FOS/DAPC

SUBJECT: Sampling in the Vicinity of the Crete Metals Facility

On Tuesday, June 24, 1980, a field trip was made to the Crete area in order to take various samples. Those participating included:

Carolyn Hesse, USEPA
Chick Steiner, USEPA
Doug Grothe, USEPA
Gary Brenniman, U of I, SPH
Venessa Musgrave, IEPA
William Withrow, IEPA

Except for the changes listed below, the sampling follows the sampling schedule, (as attached).

Changes - Sample site #7 was moved to the south pasture at Rita Battenhauser's stable.

Missing samples - on site samples of stack scraping from Crete Metals; samples #9 & #10, (these samples will be collected after a court order has been obtained).

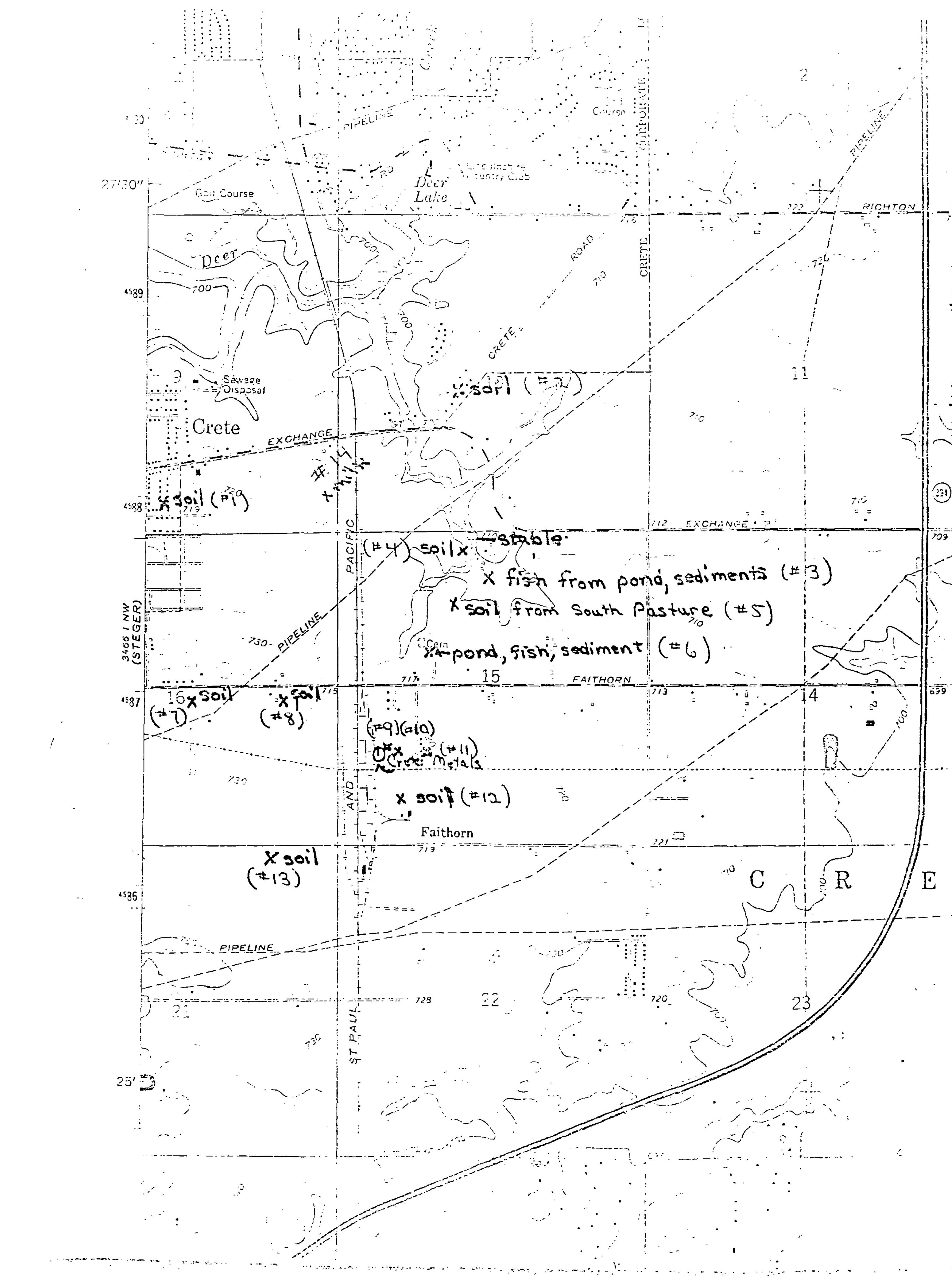
- Milk sample; sample #14.

KK/sl

cc: Miles Zamco
Tom Bierma

PROPOSED SAMPLING

site #/sample	#1/soil	#2/soil	#3/fish	#3/pond sediments	#4/soil	#5/soil	#6/fish	#6/pond sediments	#7/soil	#8/soil	#9/soil	#10/soil	#11/soil	#12/soil	#13/soil	#14/Milk	control soil A	control soil B	control fish	#4/horse fat	#4/horse liver	#4/horse kidney	#4/horse feed	stack scraping	#4/horse bedding
..TALS: lead, tin, timony, copper, cadium, chromium, molybenum, silver, arsenic, ercury, zinc	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HLORINATED ORGANICS: CB, PBB, pesticides, rans			X	X		X	X	X			X	X	X			X	X	X	X	X	X	X	X	X	X
THER ORGANICS			X	X		X	X	X			X	X	X			X	X	X	X	X	X	X	X	X	X
HLORIDE, BROMIDE, ODIUM, CALCIUM	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X						X	
TOXINS			X	X			X	X			X	X				X			X	X				X	X



PIPELINE
Golf Course
Lincolnshire Country Club
Deer Lake
27'30"
RICHTON
Deer
700
4589
CRETE ROAD
CRETE
CORPORATE
2
11
9
Sewage Disposal
Crete
EXCHANGE
X soil (#2)
#15 X milk
X soil (#1)
4588
EXCHANGE
PACIFIC
(#4) soil X
stable
X fish from pond, sediments (#3)
X soil from South Pasture (#5)
X pond, fish, sediment (#6)
3466 I NW (STEGER)
730
PIPELINE
15
FAITHORN
4587
16 X soil (#7)
X soil (#8)
(#9)(#10)
(#11)
Crete Metals
14
X soil (#12)
AND
Faithorn
X soil (#13)
4586
C
R
E
PIPELINE
21
22
23
ST PAUL
25'

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: JUL 07 1980

SUBJECT: Environmental Sampling near Crete Metals on June 24, 1980.

JUL 10 1980

RECEIVED

JUL 14 1980

EPA-DAPC-SPFLD

FROM: Carolyn Hesse
Health Effects Specialist
Toxic Substances Office

TO: see below

On June 24, 1980 field samples were taken in and near Crete, Illinois to try to determine the extent of environmental contamination which might be attributable to Crete Metals. Three representatives from Illinois Environmental Protection Agency (Bill Withrow, Vanessa Musgrave and Kerry Keller), one representative from the University of Illinois School of Public Health (Gary Brenniman) and three representatives from U.S. Environmental Protection Agency (Charles Steiner, Doug Grothe and Carolyn Hesse) participated.

A total of thirteen soil and sediment samples were taken, and aquatic life from three ponds was collected. The soil samples for halides were collected by taking corings, while the samples for organic and metal analyses were taken from the top, one or two inches of soil. Water samples for metal analyses were collected from tap water near sites numbered 11 and 4 and from surface waters of each pond. Mr. Steiner and Mr. Grothe, aquatic biologists, also conducted a biological survey of the area.

The sampling scheme used in the field generally followed the one outlined in the proposal dated June 5, 1980. The soil sample from the site numbered 7 in the proposal was not collected; instead, a second soil sample was collected from the south pasture at the stable.

Samples from sites numbered 9 and 10 and the stack scraping were not collected because we could not get on Crete Metals property. The milk sample will be collected when the rest of the samples are collected, which will probably be on July 14 or 15, 1980.

A map showing the sampling locations and a chart showing what tests are to be run on which samples is attached. The control soil, pond sediment and aquatic organisms were taken from a comparatively clean site located off the attached map.

The soil, sediment and stack scraping samples are to be analyzed by U.S. EPA's Central Regional Laboratory; the metal analyses on the water and biological samples will be performed by the Illinois Department of Public Health (IDPH) laboratory at Springfiled; and the organic analyses on the biological samples will be performed by the IDPH laboratory in Chicago. Samples collected for dioxin analysis are being held until results are obtained on some of the other samples. Funding for dioxin analyses might be obtainable through the Dioxin Coordinator (Mike Dellarco) at U.S. EPA Headquarters.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: July 30, 1980

TO: Sy Levine, Region 1 Manager, FOS,DAPC

FROM: William Withrow, FOS,DAPC WW

SUBJECT: Sampling at Crete Metals and the Immediate Vicinity.

On Tuesday, July 29, 1980, various samples were collected to complete the sampling project which began on June 24, 1980 (see June 27, 1980 memo). Those participating included:

Carolyn Hesse, USEPA
Doug Grothe, USEPA
Sy Levine, IEPA
Kerry Keller, IEPA

To obtain samples from the stacks at Crete Metals, the Steger fire chief, Elmer Joyce, provided the departments'snorkel and a fireman to operate the equipment.

The material obtained from the stack of incinerator #1 was reddish-brown scale. The material from stack #2 was a pale green powder which was removed from the base of the spark-arrester. Access to stack #3 was blocked by a utility pole and a mobile home.

Samples were collected from the following: incinerator #1 - knock-down chamber, incinerator #2 - ledge at the base of the stack, incinerator #3 - wall of the primary chamber.

Soil samples #9 (150 ft East of building) and #10 (15 ft South of building) were also collected.

Hay samples were taken from bales of hay at the Spring Hills Stable. The hay was grown by Norman Most on field located West of Crete Metals.

Milk samples were obtained from Wehlon Triebold's dairy herd. The cattle graze on pasture located North of Crete Metals.

WW/sl

cc: Miles Zamco
Steve Grossmark, Asst. A.G.
Tom Bierma

Reference VIII

University of Illinois at Urbana-Champaign

College of Veterinary Medicine
DEPARTMENT OF VETERINARY BIOSCIENCES

261 Veterinary Medicine Building
Urbana, IL 61801 333-3376
(217) [redacted]

October 16, 1980

Mr. Bill Zenisek
1701 1st Avenue
Suite 1205
Maywood, Illinois 60153

Dear Bill,

Regarding the Crete Metals Case and the results of our Dioxin Bioassay procedure:

Copies of the protocol which we followed and the histopathology report on the test rabbits are enclosed.

No conclusion can be drawn based on these findings regarding any specific toxicity. While some of the changes in the skin and liver are similar to those reported in the reference article, other changes which they found (such as loss of sebaceous glands) were not present. Also none of the test animals died from applications of these extracts.

Please let me know if I can be of further assistance and please notify me of any future lab results.

Cordially,

Val R. Beasley

Val R. Beasley, D.V.M.

VRB:cev

Enclosures

, ODD FRIER'S DRYING LEAVES
(dried material)

104.9
75.2
29.7g

8-4" → 8 hrs

#4 TCDD lake bed near dam (very wet muddy soil) Bittenhausen Pasture
161.5
75.6
85.9g

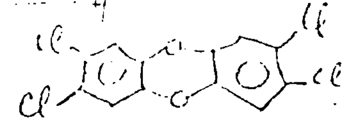
$5^{30} \rightarrow 4^{30}$

#5 Lakebed close to Hoslet (very wet soil) Bittenhausen Pasture
124.5
75.1
49.4

#6 Mud from H_2O hole Bittenhausen Pasture
127.9
75.9

[illegible] 9/9/86

Field Sample Analysis for Dioxins II

TCDD 2,3,7,8 Tetrachlorodibenzo p-dioxin 

Bioassay: Science vol 188 p 738 16 May 1975

extract soil or sample in a soxhlet with dichloromethane.
Concentrate and apply a dose (0.2ml) of extract to
the inner aspect of one ear of a rabbit daily for 3-5 days.
Sacrifice surviving rabbits after 7 days and examine
histopathology.

Sample #'s 5-28-80

1 TCDD = mud under barrel in ditch
(note soil was damp)

144.5 g
75.5 g
69.0 – wet weight

added 350ml $MeCl_2$ → soxhlet cycled ~ every 20 min.
extracted for 5 hrs ≃ 15 cycles

sample #. 2 TCDD Soil FIER'S YARD
(soil was quite dry)

99.4
75.6
23.8

start 5[30]
end 9[30]
4 hrs

6/26/80 Applied an additional 0.20 ml to rabbits

Rabbit #5 (accidentally applied soln #6 to left ear, then applied #5 soln to right ear ~~from~~ all future applications to be applied to right ear!

Rabbit #6 superficial laceration on inside of pinna near first fold above the ear canal

all other rabbits - no visible reaction

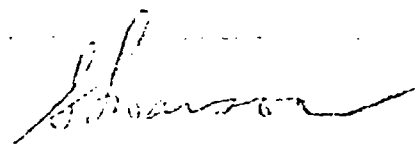
Swanson 6/26/80

6/27/80

R #1 apparent viscosity residue in left ear, scab over posterior thoracic dorsum

#3 shaking head & ran in circle 4-5 times after treatment lilting ears droop

#6 laceration on inside of pinna appears to be healing



conc. TCDD extracts by evap. at RT in the hood (to 25ml) transferred to sent. vials conc (to ~~dry~~ (not less than 1ml vol) and qs to 3ml except #3 which was very dark & oily = qs to 5ml stored in refrigerator

Rabbit test - bioassay 6-25-80 Steve Swanson

0.2 ml of test solns were applied to the inner left ear of weanling white rabbits

Rabbit #	test soln
1	1TCDD mud under barrel in ditch.
2	2TCDD soil Fiers yard
3	3TCDD Fiers Drive leaves
4	4TCDD lake bed near dam
5	5TCDD lake bed close to hoselat
6	6TCDD mud from water hole
7	CH_2Cl_2 control

4/28/80

#1 an area near base of inside of left ear
- 2/3 cm dia hyperemic slight
apparent transudation

#4 1mm dia. superficial loss of ep. Thelium
just above 1st fold inside of left ear

#6 loss of epithelium on anterior
inside near base of ear in 2 areas
each 2mm long also superficial
reaction near margin adjacent to
other lesions.

#5 treated on ~~left~~ ear, then treated
again on rt ear.
- pinpoint lesion (superficial in middle
of ear)

1/18 Tuesday

#7 abrasion near anterior central pinna 2mm x 3, otherwise normal

#1 2 scabs other areas residue appears to be pealing off

#6 lesions appear to be healing in both ears

#5 rt ear healing left ear drooping tilting head slightly to left but able to circle in both directions

4 lesion appear to be healing

3. did not eat quite as much food as other rabbits, no visible change in ears

[illegible]

Mon. [illegible] [illegible]

#7. [illegible] appear to be healed [illegible] droppings normal alert

#1. normal droppings, alert, [illegible] appears to be [illegible] scab [illegible]

#2. alert, [illegible] droppings normal

#3. droppings normal, alert,

#4. droppings normal, alert [illegible] inside left ear, all [illegible] areas do not have [illegible] inflammatory reaction nor ulceration

#5. droppings normal, alert [illegible]

[illegible]

7/2/80 Wed.
rabbit #3 committed suicide
by hanging - caught head in bars - strangled

#7 · no reaction in left ear. Si small lesion
in right ear.

#1 no change

#8 residue is loosening otherwise no change

#5 normal

#4. no significant change

#3 - dead

#2 residue peeling off
no apparent [illegible].

[illegible]

Species Rabbit Date 7/2/80

Age ___ Sex ___ Breed ___

Color Wht. Wt. ___ Name ___

Total No. on Premise ___ No. in Affected Group ___

OWNER Diagnostic - experimental

Address Urbana, IL 61801

County Champaign Twp. ___

Attending Veterinarian

Dr. Val R. Beasley

Vet Med
Street

City State Zip

Telephone: ___-___, Area Code ___

VB

VETERINARY DIAGNOSTIC MEDICINE
P.O. Box U
URBANA, ILLINOIS 61801
PHONE: 333-1620, AREA CODE 217

cc ___

Delivered by ___

Specimen 6 live

SEND INVOICE TO:

Clinic or Dr. ___

Street ___

City ___

State ___ Zip ___

Date Rec'd ___

Ref. ___

RECEIVED
JUL 2 1980
VM DIAGNOSTIC LAB

Please send a supply of this submission form ☐

Please send a supply of address labels ☐

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Gross Path ☑ Tissue specimens of seven (7) rabbits were presented for histologic examination. The findings include the following:

Skin of ear: Hair follicles are moderately distended with keratin plugs(1-3,4,6); moderate acanthosis of epidermis (1-2,4,5,6) mild parakeratosis and focal intracorneal abscessation (6); mild (1,2,7) to dense(6), perivascular (5,7), periadnexal (1,2) or localized diffuse (6) infiltration of mixed leukocyte population in dermis; localized dermal edema (5,6), congestion and focal hemorrhage (6).

Micro Path ☑ Liver: Centrolobular (1) or midzonal (2) hepatocytes, or those of both zones (4-6) are markedly swollen; occasional (1-2/lobule) (1-5) or a small number (2-5/lobule (4,6,7) of binucleate hepatocytes are noted; widely scattered (1/hpf) mitotic figures are noted among hepatocytes (2) and occasional megalocytes are noted (3); focal biliary hyperplasia and early periportal fibrosis are noted(3) and a mild lymphocyte (3) to mixed leukocyte (including eosinophils) infiltration is noted in portal triads (4-6).

Parasitol ☐ Brain: A nonsuppurative meningoencephalitis compatible with Nosema spp infection is noted (2,3,5).

Serol ☐

Bact ☑ Kidney: Patchy dense lymphocyte infiltration of the cortical interstitium is noted (1-4) in several foci accompanied by extensive focal fibrosis and wedge-shaped fibrous scarring of the subcapsular parenchyma (3); focal tubular atrophy, proteinaceous cast formation and glomerulosclerosis are noted in the scarred foci (3).

Chem ☐

Mycol ☐

Virol ☐

Comment ☐ Cervical(neck) enlargement: Multiple circumscribed abscesses are noted (4); focal chronic lymphadenitis with focal abscess formation and focal mineralization of caseous material are noted (6).

Spleen: NSL(1,2,4,6,7)
Adrenal: NSL(1-3)
Pancreas: NSL(1,4)
Myocardium: NSL(1-4,6)
Bone marrow: NSL(1,4,6)
Trachea: NSL(7)
Lung: Mild alveolar edema (2,7); patchy peribronchiolar or perivascular large lymphocyte aggregates are noted(7).

Summary (prelim) Bacteriology: Report attached.

(final) Continued on page 2

Bruce C. Thiede DVM
(Laboratory Veterinarian)

Report: Telephone ___ Prelim: ___ Final: ___

Comment: Changes in the ear of rabbits 1-6 (keratin plugging of follicles, acanthosis, dermal edema, hemorrhage and infiltration) suggest some form of irritant contact injury possibly associated with local trauma or bacterial infection. Occasional binucleate hepatocytes are noted in the rabbit (1/lobule) however the larger number of binucleate hepatocytes and occasional megalocytes or mitotic figures noted in these rabbits suggests some form of injury to hepatocytes. Megalocytosis associated with pyrolizidine alkaloids is frequently delayed until 3 weeks after a single exposure. The finding of these changes in all rabbits suggests a common change unrelated to experimental procedure.

Cutaneous changes are non-specific.

Diagnosis:
1) Nervous, brain, meningoencephalitis, nonsuppurative (impression, Nosema spp)#9136,9
2) Hemolymphatic, lymph node, lymphadenitis, focal, chronic #5076
3) Hemolymphatic, lymph node, abscessation #5067
4) Integumentary, follicular and epidermal hyperkeratosis #1199
5) Integumentary, acanthosis and mild parakeratosis #1010
6) Integumentary, dermatitis, acute and subacute #1139
7) Digestive, liver, hydropic degeneration, central and midzonal #6532,6523,6535

Reference IX

Midwest Center for Mass Spectrometry
at the University of Nebraska-Lincoln
Department of Chemistry, Lincoln, NE 68588 (402) 472-3507

December 12, 1980

Illinois Environmental
Protection Agency
Division of Air
Pollution Control
2200 Churchill Road
Springfield, IL 62706

Dear Sir:

Enclosed please find the report entitled "Analysis of Tetrachlorodibenzodioxin and Tetrachlorodibenzofuran in Three Environmental Samples and One Biological Sample". If you have questions on the report, please call me at 402/472-2794.

We will be sending you a bill for the project under separate cover.

Sincerely yours,

Michael L. Gross
Professor and Director

MLG:lc
c.c: Genevieve Schwager (also attached report)

Enclosure

REPORT

Analysis of Tetrachlorodibenzodioxin and Tetrachlorodibenzofuran in Three Environmental Samples and One Biological Sample

for

State of Illinois

Environmental Protection Agency

Work Performed at:

Midwest Center for Mass Spectrometry
Department of Chemistry
University of Nebraska
Lincoln, Nebraska 68588

Michael L. Gross
Professor and Director

December 12, 1980

Submitted by:

Michael L. Gross

Introduction

This is a report on the analysis of various environmental and biological samples for the compounds tetrachlorodibenzodioxin (TCDD) and tetrachlorodibenzofuran (TCDF). The report is organized in four major parts. In the first section, we present a discussion of the results. The remaining three sections are experimental sections and include a description of the sample extraction and clean-up procedure, a description of the gas chromatography high resolution mass spectrometry analysis, and finally a summary of our results in the form of data tables. Also enclosed, after the data tables is a summary of a recovery study for TCDF performed in our laboratory.

Results and Discussion

After extracting a sample for TCDD (see following sections for descriptions), our general procedure for analysis is to monitor m/z 321.8936 and m/z 333.9338 at a mass resolution of 10,000. The signal m/z 321.8936 is the largest molecular ion signal for TCDD. The signal at 333.9338 is for the TCDD internal standard, a TCDD in which all of the carbons have been substituted by carbon-13. This material is added for the sake of accurate quantitation using the internal standard method and for measurement of recovery. Detection limits are determined by multiplying the noise level in the experiment by a factor of 2.5. Any positives that are detected are confirmed by a second injection of a sample extract, monitoring m/z 319.8965 and 321.8936. Intensity ratio for these signals should be 0.78 ± 0.10.

This procedure was not employed for the "Crete Stack 2" sample. Here, we could not quantitate using the ratio (m/z 321.8936)/(m/z 333.9338) because the sample extract contained large quantities of chlorinated material and had to be diluted prior to GC/MS analysis. Because of the dilution the signal at m/z 333.9338 could not be observed. Therefore, the quantitation was done by an absolute method in which the intensities of the signals observed at mass 319.8965 and 321.8936 were compared to signals generated for standard solutions of TCDD injected in adjoining runs. These signals were not corrected for recovery because no recovery could be measured because

of the dilution. Therefore, the concentration reported for this sample is a minimum concentration.

The analysis for tetrachlorodibenzofuran (TCDF) is similar to that employed for TCDD. However, no isotopically labeled internal standard is available for TCDF and, therefore, an absolute method of quantitation had to be employed. For these compounds, we monitor m/z 303.9016 and m/z 305.8987. The concentrations, which were determined by the absolute intensities of these signals, were corrected using the recoveries measured for TCDD. This, of course, assumes that the recovery for TCDF is identical to that for TCDD.

To check this point, a recovery measurement was made using a sample of beef adipose. This sample was spiked with authentic 2,3,7,8-TCDF, extracted, and then analyzed by the method employed for all of the unknowns. We found 495 parts-per-trillion for a sample to which 649 parts-per-trillion had been added. Therefore, the recovery is about 75%, which is consistent with our assumption that the recovery for TCDF is similar to that for TCDD, and also with a previous recovery study for TCDF (see Table V). For the sample, "Crete Stack 2", no recovery was measured because of the dilution problem mentioned above. Therefore, the concentrations of TCDF were <u>not</u> corrected for incomplete recovery, and the levels represent a minimum value.

Both analyses of TCDD and TCDF, using our method of packed column gas chromatography/high resolution mass spectrometry, suffer from the limitation of inability to separate all of the isomers of TCDD and TCDF. The column is capable of separating some of the isomers; however, we cannot assert that the method is isomer specific. Furthermore, we do not have authentic standards for all isomers. The data are reported in two categories: (a) as TCDD and TCDF isomers which elute prior to the 2,3,7,8 isomer in each case, and (b) as isomers which co-elute with 2,3,7,8-TCDD and 2,3,7,8-TCDF. For most of the samples, a distribution of isomers was observed which was more complicated than just two isomers. Since our analysis uses peak profile data and a signal averaging computer of limited memory, we were only able to divide the classes

of compounds into "pre-eluters" and "co-eluters".

Conclusion

The highest concentration of TCDD's are found in "Crete Stack 2" sample. Both pre-eluters and co-eluters were observed in roughly equivalent amounts. The total concentration is at least 410 parts-per-trillion. This level is a minimum amount because the recovery is uncertain and certainly less than 100%. The second highest level for TCDD was found in the furnace. Here a total of 58 parts-per-trillion was found. The concentration of pre-eluters was slightly larger than that of 2,3,7,8 and co-eluters.

The soil sample contained only pre-eluters at a detection limit of 21 parts-per-trillion. However, the detection limit is high for the 2,3,7,8 and co-eluters and is comparable to the level found for the pre-eluters. Finally, the adipose tissue sample contained only 2,3,7,8-TCDD and co-eluters at a level of 45 parts-per-trillion. If pre-eluters are present, they are at levels less than 5 parts-per-trillion. This final result is suggestive of the fact that there may be a mechanism for selective destruction of the pre-eluters or selective accumulation of 2,3,7,8 and co-eluters.

All detections were confirmed by measurements of isotope ratios which were within experimental error of the correct isotope ratio for a molecule containing four chlorines. There is apparently no cross contamination of samples and no laboratory contamination because all blank samples showed non detectable levels of TCDD and TCDF. For TCDF, positives were again found for all samples (except that the fat again contained no preeluting TCDFs). The highest levels were found in the "Crete Stack 2" sample with definite concentrations also detectable in the furnace and the soil. Comparable amounts of both pre-eluters and co-eluters were found in each case. A summary of the total amount of TCDD and TCDF and the ratio of TCDF to TCDD is given in the following table.

Sample	Total Concentration-TCDD	Total Concentration-TCDF	Ratio TCDF/TCDD
Crete Stack 2	410	11,600	28
Crete Furnace 2	58	730	13
Soil	21	230	11
Adipose	45	165	4

The higest concentrations of TCDD and TCDF are found in the stack. Smaller concentrations are found in the furnace and then in the soil. The ratio of TCDF to TCDD in all of these samples varies between 10 and 30. The variation in total concentrations is reasonable. One would expect the furnace to have lower concentrations of these materials than the stack because of its hotter temperature. The soil would have even lower concentrations because the material is diluted in the environment. The ratio of TCDF to TCDD is interesting. The ratio of concentrations is reduced to a factor of 4 in the adipose tissue which may be suggestive of selected degradation of TCDF in the biological sample or selective accumulation of the TCDD's in that sample.

As was mentioned previously, the concentrations of the highly toxic 2,3,7,8 isomers of TCDD and TCDF have not been verified in these analyses. We are highly certain that a number of compounds are present in all of the samples which have the correct elemental compositions for TCDD and TCDF and that they occur as a complex mixture of isomers for both compound classes.

Sample Extraction Procedure for Horse Tissue

The sample was accurately weighed and spiked with a known amount of C^{13}-TCDD. It was then saponified in 15ml of ethanol* and 30ml of 40% aqueous KOH in a reflux apparatus for 60 minutes with stirring. The sample was completely hydrolyzed before terminating the saponification.

The solution was transferred to a 250ml separatory funnel and diluted with 20ml of ethanol and 40ml of water and extracted four times with nanograde hexane. The first extraction was done with 25ml of hexane, shaking vigorously for one minute. The lower aqueous layer was removed to a clean beaker, and the upper hexane layer was decanted to a 125ml separatory funnel. The aqueous layer was then extracted three times more with 15ml portions of hexane, each time adding the hexane to the 125ml separatory funnel. The combined hexane extracts were washed with 10ml water to remove excess base.

The combined hexane extracts were washed 4 times with 10ml concentrated H_2SO_4, or until both layers were clear. As many as 8 extractions may be necessary, depending upon the sample. Again the hexane was washed with 10ml water. The hexane layer was decanted to a 2 ounce jar and concentrated under a stream of dry nitrogen to approximately one ml.

Three chromatography steps were done, the first being a silica gel column. No activation of silica was necessary. A 5cm column was prepared using a disposable pipet plugged with glass wool. The silica was capped with 1/4cm anhydrous sodium sulfate to remove water, and then wetted with hexane. The sample, dissolved in 1 ml of hexane, was transferred to the column. A second ml of hexane was used to rinse the jar and was subsequently added to the column. Dioxin was eluted with 3 ml of 20% (V/V) benzene in hexane. All the eluate was collected in another 2 ounce jar and concentrated to a volume of 1 ml.

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* All solvents are of the highest grade and suitable for residue analysis.

Alumina was washed by saturating with methylene chloride, removing excess solvent, then activating at 225°C for 24 hours. A column was prepared in the same manner as the silica column above. The column was cooled to room temperature in a dessicator before use.

Hexane was used to wet the column before transferring the sample. The jar was again rinsed with one ml of hexane which was transferred to the column. The alumina was eluted with two 3 ml portions of pesticide grade CCl_4, then with 4 ml of CH_2Cl_2. These solvents were used to rinse the jar before being transferred to the column. The methylene chloride fraction was collected in a clean 2 ounce jar and concentrated under nitrogen while replacing the volatile CH_2Cl_2 with hexane. All other fractions can be discarded.

The final step was florisil chromatography. The florisil was saturated with methylene chloride and activated in an oven at 165° C for 24 hours. The packing was allowed to cool in a vacuum dessicator. A five cm column was prepared in a disposable pipet plugged with glass wool. The column was packed with 10ml of hexane under light nitrogen pressure, in an attempt to remove all air pockets.

The sample, dissolved, in one ml of hexane, was added to the florisil column. The container was rinsed with one ml of 8% (by volume) methylene chloride in hexane. The column was eluted with nine ml of 8% CH_2Cl_2. The dichloromethane fraction, which contained the TCDD, was collected in a centrifuge tube, and the solvent was evaporated to a small volume under a stream of dry nitrogen. The sides of the centrifuge tube were rinsed down with one ml of hexane and again the volume was reduced. The tube was rinsed a final time with one ml of hexane and the solvent evaporated until the volume was less than 100µℓ. The centrifuge tube was capped with a teflon-lined screw cap and stored in a freezer at about -20°C until analysis.

Sample Extraction Procedure for "Crete Soil"

The sample was accurately weighed in a 125ml Erlenmeyer flask and spiked with a known amount of C^{13}-TCDD. The spike was allowed to dry on the soil before proceeding. Ten ml of 0.2M ammonium chloride solution (10.7g/liter) was added to saturate the soil. The soil was allowed to stand for several minutes.

Fifty ml of 1:1 (by volume) hexane/acetone solution was then added; the solution was stirred for 15 minutes using a magnetic stirrer. The solvent was carefully decanted into a 250ml separatory funnel, filtering suspended particles through glass wool. Another 40ml of hexane/acetone was added and the soil was allowed to stir for another 30 minutes. Again, solvent was decanted and filtered.

The hexane/acetone solution was extracted twice with 25ml of 1N KOH, followed by one extraction with 25 ml of distilled water. (Any emulsions formed were broken up by addition of a few drops of concentrated H_2SO_4). Several washings with concentrated H_2SO_4 were done, approximately 10-15 ml each, until hexane and acid layers were clear. Four or five extractions were generally necessary.

The hexane layer was washed with 100ml of distilled water and excess acid was neutralized by addition of amounts of solid Na_2CO_3 to the water/hexane mixture until the neutralization reaction subsided. The water layer was then removed.

A sodium carbonate column was prepared by adding anhydrous Na_2CO_3 to a height of 8 cm in a 25ml burette. The burette was plugged with a generous amount of glass wool to prevent Na_2CO_3 leakage (Na_2CO_3 was not packed tightly). The column was wetted with hexane before transferring the hexane layer from the separatory funnel, followed by a rinse of 25 ml of hexane. All eluate was collected in 4 ounce jars, then concentrated under a stream of dry nitrogen to approximately 1 ml.

Three chromatography steps were done -- silica, alumina, and florisil -- as in the horse tissue analysis. The final eluate was concentrated in a conical centrifuge tube and stored in a freezer prior to analysis.

Sample Extraction Procedure for

"Crete Stack 2" and "Crete Furnace 2"

Each sample was accurately weighed, spiked with a known amount of C^{13}-TCDD, and placed in a pre-extracted silica sandwich in a Soxhlet apparatus. The samples were allowed to soxhlet for 24 hours in 300 ml of benzene. The cooled benzene was concentrated and replaced with hexane.

The hexane solution was extracted twice with 25ml of 1N KOH, followed by one extraction with 25ml of distilled water. It was then washed with 10 - 15 ml portions of concentrated H_2SO_4 until both hexane and acid layers were clear. The acid was removed by washing with 25ml of distilled water.

Silica, alumina, and florisil chromatography were done. See the extraction procedure for Horse Tissue for details on chromatography.

List of Materials Used in Tissue Extractions

Acetone, OmniSolv*, MCB

Benzene, OmniSolv, MCB

Carbon tetrachloride, OmniSolv, MCB

Ethyl alcohol, OmniSolv, MCB

Hexane, OmniSolv, MCB, non UV

Methylene chloride, OmniSolv, MCB

Sulfuric acid, concentrated, analytical reagent, Mallinckrodt

Water, distilled in glass

Potassium hydroxide, analytical grade, Mallinckrodt

Sodium sulfate (anhydrous), analytical grade, Fisher

Sodium Carbonate (anhydrous), analytical grade, Fisher

Aluminum oxide, neutral, activity grade I, Woelm Pharma

Florisil, 60-100 mesh, Fisher

Silica gel, 60-200 mesh, reagent grade, Baker Chemical Co.

Dry nitrogen (boil-off from liquid N_2)

*All OmniSolv line solvents are distilled in glass, suitable for chromatography and residue analysis.

Gas Chromatography/High Resolution Mass Spectrometry (GC/HRMS) Analysis (TCDD)

At the time of analysis, the side of the centrifuge tubes was washed thoroughly with approximately 100µl of hexane or isooctane using a graduated syringe. During the washing, the solvent was allowed to evaporate until a volume of ∿50µl remained. This remaining volume was accurately measured; usually three-fourths was replaced in the centrifuge tube, and the fourth remaining in the syringe was used for the gas chromatography/mass spectrometry analysis.

Mass Spectrometer

A Kratos MS-5076 ultra high resolution mass spectrometer was used for this analysis (ultimate resolution = 180,000). The mass spectrometer was interfaced via a jet separator to a Perkin Elmer Sigma II gas liquid chromatograph. Data acquisition was accomplished with a Nicolet Model 1170 signal averaging computer.

Gas Chromatography

The column was a 6' x 1/4" O.D. glass containing a Dow mixed phase packing. Typical operating conditions were: Helium flow rate of 25 cc/min; injector 275°C: column temperature program at 250°C and rampled at 10° C/Min to 275°C and held there until the dioxin had eluted. The GC/MS interface was a simple glass lined stainless steel capillary coupled to a glass jet separator and was held at an average temperature of 250°C. Typical retention time was 3.6 minutes (peak width at 10% height approximately 40 seconds).

Mass Spectrometer Conditions

The electron impact source was used at 70eV ionizing energy and an accelerating voltage of 8KV. The source was set at 260°C. The instrument was tuned to a resolving power of 10,000 (10% valley definition).

Data were acquired using the standard ion switching feature provided wiht the MS-50 (dual ion monitoring). The first analysis was made monitoring one channel m/z 321.[illegible] (the most abundant molecular ion of TCDD having natural isotopic elemental abundance

and m/z 333.9338 ($^{13}C_{12}$-TCDD, the internal standard) on the second channel. The complete peak profiles were acquired at a bandwidth of 3000Hz by scanning of a frequency of about 2Hz, corresponding in each case to a mass range of 300ppm (0.096 amu). The output of the mass spectrometer was accumulated over about 75 sweeps per channel using a Nicolet Model 1170 signal averager. The resulting signals were submitted to a three-point smoothing routine prior to print out on an X-Y recorder.

Calculation of Results

Quantitation was achieved by employing the internal standard "ratio method". Throughout the analysis period, standard samples containing TCDD and internal standard were analyzed. From these results, a calibration curve can be prepared by plotting ratio of the weights of TCDD and internal standard versus the ratio of signal intensitites (intensity at m/z 321.8936; intensity at m/z 333.9338). Residues of TCDD in actual samples were obtained by measuring the ratio of the signal intensities at m/e 322 and at 334 (internal standard) and reading the concentration of TCDD from the calibration plot. The detection limit in the actual samples was obtained by multiplying the noise level by 2.5 which was considered the maximum amount of TCDD which could be present in the sample.

The percent recovery was measured using the absolute signal intensity for the internal standard and mass spectrometer response factors measured by analyzing standard solutions of internal standard.

Validation

Samples which showed detectable concentrations of TCDD or which were questionable were reanalyzed by removing a second aliquot and reinjecting onto the GC/HRMS (see data table). For this validation, the high mass channel is centered at 321.8936 and the low mass channel at 319.8965, the second most abundant molecular ion of TCDD. All other conditions were as reported above. The theoretical ratio of intensities is 0.77 (m/z 319.8965: m/z 321.8936).

The analysis permits us to calculate a concentration of TCDD based on the absolute signal intensity observed at m/z 321.9936 using response factors determined for the mass spectrometer from analysis of standard solutions of TCDD. Based on the percent recovery measured above, the quantitation is adjusted to 100% recovery.

Validation of TCDD is considered acceptable if the observed ratio of signals is 0.77 ± 0.10.

Gas Chromatography/High Resolution Mass Spectrometry (GC/HRMS) Analysis

(TCDF)

At the time of analysis, the side of the centrifuge tubes was washed thoroughly with approximately 100µℓ of hexane or isooctane using a graduated syringe. During the washing, the solvent was allowed to evaporate until a volume of ∿50µℓ remained. This remaining volume was accurately measured; usually three-fourths was replaced in the centrifuge tube, and the fourth remaining in the syringe was used for the gas chromatography mass spectrometry analysis.

Mass Spectrometer

A Kratos MS-5076 ultra high resolution mass spectrometer was used for this analysis (ultimate resolution = 180,000). The mass spectrometer was interfaced via a jet separator to a Perkin Elmer Sigma II gas liquid chromatograph. Data acquisition was accomplished with a Nicolet Model 1170 signal averaging computer.

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The column was a 6' x 1/4" O.D. glass containing a Dow mixed phase packing. Typical operating conditions were: Helium flow rate of 25cc/min: injector 275°C: column temperature program 250°C, ramped at 10°C/min to 275°C and held there until the TCDF had eluted. The GC/MS interface was a simple glass lined stainless steel capillary (coupled to a glass jet separator) and was held at an average temperature of 250°C. Typical retention time was 6.1 minutes (peak width at 10% height approximately 40 seconds).

Mass Spectrometer Conditions

The electron impact source was used at 70eV ioninzing energy and an accelerating voltage of 8KV. The source was set at 260°C. The instrument was tuned to a resolving power of 10,000 (10% valley definition).

Data were acquired using the standard ion switching feature provided with the MS-50 (dual ion monitoring). The analysis was made monitoring one channel m/z 305.898666 (the most abundant molecular ion of TCDF having natural isotopic elemental abundances) and m/z 303. 901619 on the second channel. The complete peak profiles were acquired at a bandwidth of 3000 Hz by scanning of a frequency of about 2Hz, corresponding in each case to a mass range of 300 ppm (0.096 amu). The output of the mass spectrometer was accumulated over about 75 sweeps per channel using a Nicolet Model 1170 signal averager. The resulting signals were submitted to a three-point smoothing routine prior to print out on an X-Y recorder.

Calculation of Results

Quantitation was achieved by comparison of signal intensities for standard solutions and aliquots of samples. In addition the recovery of TCDF from 'control' samples was determined to be about 75%. The criteria for a positive assignment was 2.5/1 signal-to-noise and an isotope ratio of .77 $\pm$ .10.

Table 1: Analysis of 2,3,7,8-and Co-eluting TCDDs in Environmental Samples by Gas Liquid Chromatography/High Resolution Mass Spectrometry for Illinois EPA

University of Nebraska-Lincoln
Department of Chemistry
Lincoln, Nebraska 68588

December 12, 1980

Nature of Sample	Sample Wt. (g)	Ngs Spike	Conc. (ppt)[1]	Detection Limit (ppt)	Percent Recovery	Conc.*[2] (ppt)	Isotope Ratio[3]
Crete Soil	8.69	2.50	nd	25	30	--	--
Crete Furnace 2	10.22	4.00	15	4	60	18[4]	0.75
Crete Stack 2	24.82	4.00	--	6	--	>200[5]	0.79
Crete Horse Fat (D80-5630)	5.66	3.05	45	6	75	86	0.85
Crete Blank	10.0[6]	4.00	nd	3	70	--	--

Footnotes:

1. ppt = parts-per-trillion
2. Conc.* = concentration via an alternative method - monitoring m/z 320 and m/z 322 for confirmation
3. Isotope ratio's are used to confirm the presence of TCDD, the values are within the range of values for authentic TCDD analyzed concurrently.
4. Mass Resolution was increased to $ = 20,000.
5. This concentration valve is a minimum, the internal standard was not observed after significant dilution (due to the relatively high concentration). In addition, the mass resolution was increased to R = 20,000.
6. Assumed weight, a solvent blank.

Table II: Analysis of Environmental Samples for TCDDs Eluting Prior to 2,3,7,8-TCDD by Gas Liquid Chromatography/High Resolution Mass Spectrometry for the Illinois EPA

Nature of Sample	Sample Wt. (g)	Ngs Spike	Conc. (ppt)[1]	Detection Limit (ppt)	Percent Recovery	Conc.*[2] (ppt)	Isotope Ratio[3]
Crete Soil	8.69	2.50	21	10	30	--	--
Crete Furnace 2	10.22	4.00	43	1	60	35[4]	.75
Crete Stack 2	24.82	4.00	--	6	--	>210[5]	.78
Crete Horse Fat (D30-5630)	5.66	3.05	nd	--	75	--	--
Crete Blank	10.0 [5]	4.0	nd	3	70	--	--

Footnotes:

1. ppt = parts-per-trillion
2. Conc.* = concentration via an alternative method - monitoring m/z 320 and m/z 322 for confirmation.
3. Isotope ratio's are used to confirm the presence of TCDD, the values are within the range of values for authentic TCDD analyzed concurrently.

Table III. Analysis of 2,3,7,8-and Co-eluting TCDF's in Environmental Samples by Gas Liquid Chromatography/ High Resolution Mass Spectrometry for the Illinois EPA

Nature of Sample	Sample Wt. (g)	Conc.[1] (ppt)[2]	Detection Limit (ppt)	Isotope Ratio[3]
Crete Soil	8.69	90	10	.77
Crete Furnace 2	10.22	330	10	.86
Crete Stack 2	24.82	>7100[4]	370	.82
Crete Horse Fat (D30-5630)	5.66	165	19	.72
Crete Blank	10.0[5]	nd[6]	1	--
Crete Control[7]	5.21	495	30	.77

Footnotes:

1. Concentrations are calculated assuming the recoveries of TCDD and TCDF are identical. Concentrations corrected for 100 percent recovery of TCDD.
2. ppt = parts-per-trillion
3. Isotope ratio for confirmation, all values within an acceptable range.
4. No recovery data available, a minimum value
5. An assumed weight.
6. This blank showed a background level of about 1 part-per-trillion (at or below the detection limit). However, the real samples are at least ninety fold higher in concentration and cross-contamination of the samples is not suspected.

Table III. (continued)

7. This quality control sample actually contained 649 parts-per-trillion 2,3,7,8-TCDF. Thus, our recovery of TCDF in this sample was 75% in accord with our assumption that TCDD and TCDF would be similarly recovered by the analysis procedure.

Table IV. Analysis of Environmental Samples for TCDF's Eluting Prior to 2,3,7,8-TCDF by Gas Liquid Chromatography/High Resolution Mass Spectrometry for the Illinois EPA

Nature of Sample	Sample Wt. (g)	Concentration[1] (ppt) [2]	Detection Limit (ppt)	Isotope Ratio[3]
Crete Soil	8.69	140	17	.81
Crete Furnace 2	10.22	400	10	.80
Crete Stack 2	24.82	>4500[4]	180	.77
Crete Horse Fat (7[illegible]-5630)	5.66	nd	27	--
Crete Blank	10.00[5]	nd	1	--

Footnotes:

1. Concentrations are calculated assuming the recoveries of TCDD and TCDF are identical. Concentrations corrected for 100 percent recovery of TCDD.
2. ppt = parts-per-trillion
3. Isotope ratio for confirmation, all values within an acceptable range.
4. No recovery data available, a minimum value
5. An assumed weight.

Table V. Recovery Study for TCDF by Gas Liquid Chromatography/High Resolution Mass Spectrometry

Name	Nature of Sample	Amount Found	Amount Added	Percent Recovery	i_{Ratio} [2]
OIRS#1 [1]	method blank	.166	.204	82	.77
OIRS#2	method blank	.218	.212	100	.79
OIRS#3	method blank	.051	.057	90	.70
Xylene A	solvent blank	.178	.285	65	.73
Xylene B	solvent blank	.129	.271	50	.79
			Average:	77	.76

1) OIRS = OSHA IMPINGER RECOVERY STUDY

2) Ratio of intensities observed at m/z 304: m/z 306.
Theoretical value for ion containing four chlorines is 0.77 to 0.78.

Reference X

A Wire Reclamation Incinerator as a Source of Environmental Contamination with Tetrachlorodibenzo-p-dioxins and Tetrachlorodibenzofurans

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ABSTRACT. The authors investigated an outbreak of unusual illnesses in humans and horses residing within 1.3 km of a wire reclamation incinerator. The study included site visits; medical and veterinary examinations; analyses of furnace ash, fly ash, soil, and biologic samples for air residues. Tetrachlorodibenzo-*p*-dioxins (TCDDs) and tetrachlorodibenzofurans (TCDFs) were discovered in furnace ash, fly ash, soil, horse fat, and horse liver samples.

INCINERATION is a commonly used method for the recovery of metals from wire scrap. The combustible portion of wire insulation can be comprised of a wide variety of materials, including rubber, paper, cotton, asphalt-impregnated fabrics, silk, and a large variety of plastics, such as polyethylene, polypropylene, and polyvinyl chloride.[1] Older cables can contain chlorinated naphthalenes and polychlorinated biphenyls.[2] Thermal degradation of insulated electrical wire without proper air pollution control equipment can lead to the emission of particulates, hydrocarbons, metals, halides, carbon monoxide, nitrogen oxides, and sulfur oxides.[1,3]

Recent studies have shown that highly toxic polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) can be emitted by municipal and industrial incinerators, fossil-fueled power plants, and industrial heating facilities. Olie[4] identified several PCDDs and PCDFs in samples of fly ash from three municipal incinerators in the Netherlands. Buser and Bosshardt[5] determined that the total concentrations of PCDDs and PCDFs in fly ash from a Swiss municipal incinerator were 0.2 parts per million (ppm) and 0.1 ppm, respectively; the total concentrations of PCDDs and PCDFs in fly ash from an industrial heating facility were 0.6 ppm and 0.3 ppm, respectively. Dow[6] found PCDDs in parts per billion (ppb) levels in particulate matter from the air emissions of a stationary tar burner, rotary kiln incinerator, and a fossil-fueled powerhouse. Kimble and Gross[7] found no tetrachlorodibenzo-*p*-dioxins (TCDDs) in fly ash collected from the stack of a commercial coal-fired power plant, whereas Tiernan et al.[8] detected TCDDs in emissions from a municipal incinerator. The origin of PCDDs and PCDFs in the airborne particulates from these combustion processes is still unclear. Recent studies[9–12] have shown that chlorinated phenols, polychlorinated biphenyls, chlorinated diphenyl ethers, and chlorobenzenes can convert to PCDDs and PCDFs in thermal processes. As insulated electrical wire and cable may contain some of these precursors, incineration of these materials might lead to the formation and emission of PCDDs and PCDFs. Our investigation of an outbreak of unusual illnesses in humans and horses residing within 1.3 km of a wire

reclamation incinerator included analyses of furnace ash, fly ash, soil, and horse fat and liver samples for TCDDs and tetrachlorodibenzofurans (TCDFs).

Description of the Incident

From 1976 to 1980, citizens of a rural, midwestern community filed numerous complaints with their state Environmental Protection Agency regarding a wire reclamation facility located within 1.3 km of their homes. They claimed that incinerators at the facility were continuously emitting dense, malodorous smoke which they believed posed a hazard to their health and property. The complaints were supported by photographs and a daily emission log kept by one of the citizens. Several complained of burning eyes, sore throat, headache, dizziness, and nausea temporally related to the emissions.

The proprietor of a horse boarding stable and riding school stated that from 1976 to 1980, fourteen of her horses had died of unexplained causes. The affected horses suffered chronic weight loss, hair loss, and thickened skin on the dorsal aspect of their bodies; some developed paresis in the rear and edema of the distal parts of the limbs. Horses which grazed in the adjacent pasture were the most severely affected.

The wire reclamation facility incinerated wire, cable, and X-ray film to recover copper, silver, and lead. In 1979, the wire reclamation facility had increased operations from one to three incinerators; the new incinerators increased their processing capacity from 45 to 82 tons of scrap per month. Though the incinerators were equipped with afterburners, officials of the Environmental Protection Agency doubted that they were operating properly, if at all. The manager of the facility admitted that there was a smoke problem from the incineration of 350 tons of scrap power plant cable. He described the cable as being a 6-in diameter copper wire core, wrapped in oil-saturated paper, and covered by a lead sleeve. Subsequent to a preliminary investigation, the wire reclamation facility was closed by temporary injunction in April, 1980.

METHODS

The state Environmental Protection Agency requested the assistance of a health effects specialist from the U.S. Environmental Protection Agency (U.S. EPA), a medical toxicologist, and a veterinary toxicologist to investigate alleged health effects from pollutants emitted by the wire reclamation incinerator. Members of this team visited the site, interviewed the citizens and manager of the incinerator, collected samples for air pollutant residues, and examined the affected people and animals.

We selected the sampling sites based on the predicted behavior of the incinerator's plume, which was estimated using an atmospheric dispersion model and wind rose.[13,14] The dispersion model predicted the X max, i.e., the distance to the point where the plume touches the ground with maximum concentration. The wind rose predicted the sector within the X max area which would be most heavily impacted by the plume. The most distal X max and most heavily impacted sector are shown in Figure 1. The sampling scheme consisted of several soil samples, scrapings from two of the three stacks, and scrapings from the inside of all three furnaces. Water samples were obtained from private wells in the area. All samples were collected in June and July of 1980.

The soil sample sites are shown in Figure 1. Site No. 1 was located 50 m east of the stacks. This sample consisted of the top 5 cm of soil. Site No. 2 was located 10 m south of the facility on a spot where oil had been spilled. This sample consisted of the top 3 cm of soil. Site No. 3 was located 215 m east of the facility in the yard of one of the affected families. A core soil sample to a depth of 20 cm was collected for inorganics; a surface sample to a depth of 4 cm was collected for organics. Site No. 4 was located 1 km northeast of the incinerator in the pasture where the affected horses had grazed; both a core soil sample to a depth of 20 cm and a surface soil sample to a depth of 3 cm were collected. Site No. 5 was located 6.4 km northeast of a facility in a relatively undisturbed wooded area. A surface soil sample to a depth of 3 cm and a core soil sample to a depth of 20 cm were collected from this site to serve as controls.

Fly and furnace ash samples were collected from the top of the stacks and from the incinerator furnaces, respectively. A fire department snorkel was used to obtain samples from the top of the stacks. The material scraped from the stack of incinerator No. 1 was a reddish-brown scale. In stack No. 2, a pale green powder was removed from the base of the spark arrester. Access to stack No. 3 was blocked by a utility pole and a mobile home. Samples collected inside the incinerators were from the knockdown chamber, the ledge at the base of the stack, and the wall of the primary chamber, in incinerators No. 1, 2, and 3, respectively.

All samples were placed in new glass jars and refrigerated. Aluminum foil was placed between the sample and lid of the jar. Samples for inorganics; polychlorinated biphenyls (PCBs), polybrominated biphenyls (PBBs), pesticides, and phthalates; and nonvolatile organics were analyzed by the U.S. EPA Central Regional Lab according to their standard operating procedures: CRL method No. 571-598, No. 198-207, and No. 625, respectively.[15-17] Veterinary samples for PCBs and PBBs were analyzed by gas liquid chromatography at the Regional Veterinary Diagnostic Laboratory in Centralia, Illinois. Analyses for TCDDs and TCDFs were performed by Dr. M. Gross at the Midwest Center for Mass Spectrometry at the University of Nebraska using a gas chromatography/high resolution mass spectrometry procedure, as described in a previous work.[7]

Citizens who complained of adverse health effects were offered medical examinations in the Occupational Medicine Clinic at a nearby county hospital. The examinations included a medical history, review of medical records, physical examination, complete blood count (CBC), serum chemistry screen, liver profile, urinalysis, pulmonary function tests, blood lead, free erythrocyte protoporphyrin (FEP), and serum PCB level. One patient (N.C.) had an extensive neurologic work-up before being examined at the Occupational Medicine Clinic, the results of which are also presented.

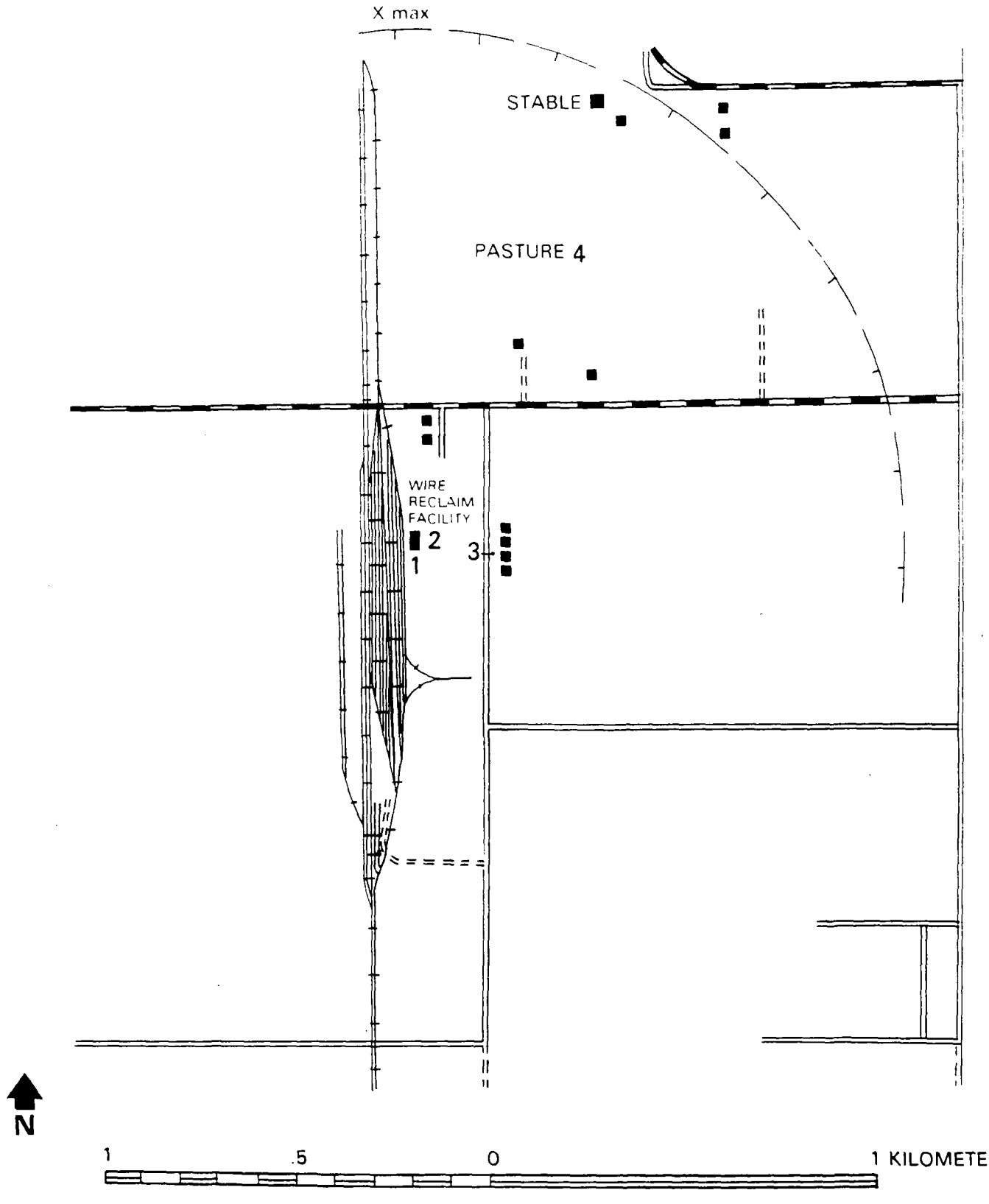

Fig. 1. Map of area including most heavily impacted sector (*dashed lines*) and soil sample sites 1–4.

The veterinary toxicologist examined and obtained a blood lead level on a dog kept in a home located 225 m east of the incinerator. Bone lead content was measured in two rabbits taken in the field between the home and the incinerator. A fat sample for PCBs and PBBs analyses was obtained from a chicken raised nearby. Calves, chickens, and horses were examined at a small farm located 0.5 km from the incinerator. Frozen liver from two

Table 1.—Levels of Selected Inorganics in Soil, Stack, and Furnace Samples

Sample	Inorganic Parameters (ppm) Copper	Lead	Silver	Chloride
Soil samples				
1	83	110	ND (<3)†	25
2	16,000	148,000	14	32
3*	18	68	ND (<.3)	118
4*	11	37	ND (<.3)	94
5*	19	50	ND (<.3)	45
Stack samples				
1	39,000	37,000	46	NA‡
2	138,000	179,000	44	NA
Furnace samples				
1	53,000	31,000	58	85,500
2	12,000	11,000	6	185
3	2,600	6,300	55	131

*Core samples.
†Not detected at the detection limit indicated in parentheses.
‡Not analyzed.

calves previously butchered were collected and analyzed for PCBs, PBBs, arsenic, lead, copper, and molybdenum. Fresh eggs were collected and analyzed for PCBs and PBBs. A live chicken was sacrificed for pathologic examination. The liver was analyzed for levels of lead, PCBs, and PBBs; fixed lung tissue was analyzed for metals using energy dispersive X-ray analysis.

The veterinary toxicologist examined the horses, feed, and pasture at the horse boarding stable located 1.3 km northeast of the incinerator. Blood, fecal, skin, and hair samples were collected. Blood tests included a complete blood count, serum chemistry screen, liver profile, and blood lead. A post-mortem examination was performed on an 18-yr-old mare at the state university's Laboratory of Diagnostic Veterinary Medicine. Fat and liver samples were frozen in methylene chloride-rinsed aluminum foil and sent to Dr. Gross for TCDD and TCDF analyses.

RESULTS

Pollutant residues. The levels of copper, lead, silver, and chloride in the soil, stack, and furnace samples are presented in Table 1. The levels of copper, lead, and silver in the furnaces and stacks reflect their use as metal recovery incinerators. The high level of chloride from furnace No. 1 suggests that material incinerated there had contained an appreciable amount of chlorine. Soil sample No. 2, located 10 m south of the incinerator, contained the highest soil levels of copper, lead, and silver. The on-site soil samples—Nos. 1 and 2—contained higher levels of copper and lead than did the off-site and control samples.

The levels of organic compounds in the soil, furnace, and stack samples are presented in Table 2. Several polycyclic aromatic hydrocarbons, usually associated with combustion, are present in all three furnace samples, with the highest levels and the greatest variety from furnace No. 1. Many of these compounds (phenanthrene, anthracene, fluoranthene, and pyrene) were also found in soil sample No. 1, collected 50 m east of the facility. Soil sample No. 2, collected 10 m south of the facility from an area where oil had been spilled, contained 6.9 ppm of PCBs. Low levels of several phthalates, commonly used as plasticizers, were found in soil sample No. 3. Soil sample No. 4, collected from the horse pasture, contained 0.06 ppm of DDT. Except for elevated iron and total solids, the water samples had no abnormal values beyond the maximum contaminant level for public water supplies.

Total TCDD and total TCDF levels in soil sample No. 1, soil sample No. 4, furnace No. 2, stack No. 2, horse fat, and horse liver are presented in Table 3. The highest levels of TCDDs and TCDFs were found in the stack sample. Lower levels were found in the furnace and in soil sample No. 1. TCDDs and TCDFs were not detected in soil sample No. 4. TCDFs were found in both horse fat and liver. TCDDs were found in the horse fat, but not in the horse liver. No known dioxin-contaminated pesticides had been used in the area.

Medical examinations. Thirteen people residing within 1.3 km of the incinerator complained to state Environmental Protection Agency officials of adverse health effects. Five people agreed to be examined in April and May of 1980.

N.C., a 27-yr-old male, and his wife (C.C.) had resided approximately 220 m east of the incinerator since 1978. The patient complained of eye and throat irritation, dizziness, and nausea when he was exposed to smoke emitted by the incinerator. In May, 1979, he had an episode of transient neurologic dysfunction characterized by mild weakness of the right upper extremity and face along with blurred vision. In December, 1979, he had the onset of oscillopsia and was noted to have bilateral nystagmus. On physical examination the patient was found to have acne vulgaris, upbeating nystagmus in all directions of gaze, mild diminishment of alternate movement rate in the right upper extremity, and a right Babinsky sign. The following laboratory tests were within normal limits: CBC, serum chemistry group screen, serum triglycerides, serum protein electrophoresis, sed rate, syphilis serology, L.E. clot test, urinalysis, blood lead, FEP, serum PCB, and head CT scan. Lumbar puncture showed normal total protein and IgG with a normal cell count. Brainstem auditory evoked responses were normal bilaterally, but pattern shift visual evoked responses were abnormal.

C.C., a 28-yr-old female, complained of irritation of the eyes and throat, dizziness, and nausea when exposed to smoke from the incinerator. She complained of a gradual onset of frontal headache and transient visual disturbances since February, 1979. These symptoms persisted after the birth of a healthy daughter in May, 1979. On physical examination, the patient was found to have a maculopapular rash localized in the right scapular area and a III/VI systolic murmur heard at the apex and left parasternal border.

Laboratory studies, including a CBC, urinalysis, liver profile, triglycerides, urinalysis, blood lead, FEP, serum PCB, and pulmonary function tests were within normal limits.

S.D., a 52-yr-old female, had owned horse boarding stables and a riding school approximately 1.3 km northeast of the incinerator since 1966. During the past 2 yr the patient complained of excessive tearing, rhinitis, episodic throat and chest tightness, occipital headache, and transient left-sided paresthesias. She also complained of generalized weakness, loss of appetite, and joint stiffness. On

Table 2.—Levels of Organic Compounds in Soil, Stack, and Furnance Samples

	Samples									
	Soil					Stack		Furnace		
Organic Parameters	#1	#2	#3*	#4*	#5*	#1	#2	#1	#2	#3
Pesticides [ppm (detection limit ⩽ 1 ppm)]†	–‡	–	–	0.06§	–	–	–	–	–	–
PBBs [ppm (detection limit ⩽ .5 ppm)]	–	–	–	–	–	–	–	–	–	–
PCBs [ppm (detection limit ~ .5 ppm)]	–	6.9/	–	–	–	–	–	–	–	–
Chemicals detected from organic scans (ppm):										
Hexachlorobenzene	–	–	–	–	–	–	–	23.8	–	–
Phenanthrene & anthracene	1.4	–	–	0.3	–	4.3	–	481.5	9.1	3.7
Methyl phenanthrene & methyl anthracene	–	–	–	–	–	–	–	0.4	–	–
Fluoranthene	0.3	–	–	–	–	0.1	–	39.3	–	0.2
Pyrene	0.3	–	–	–	–	–	–	37.8	–	–
Napthalene	–	–	0.1	0.1	–	–	–	–	–	–
Methyl naphthalene	0.1	–	–	–	–	–	–	–	–	–
2-phenyl naphthalene	–	–	–	–	–	–	–	1.4	–	–
Hexachlorostyrene	–	–	–	–	–	–	–	4.1	–	–
9H-fluoren-9-one	–	–	–	–	–	–	–	6.3	–	–
9, 10-anthracenedione	–	–	–	–	–	–	–	14	–	–
7-(1, 1-dimethyl) 2, 3 dihydro-3, 3-dimethyl-1 H-inden-1-one	–	–	–	–	–	–	–	3.5	–	–
2, 6-dimethyl-2, 5-heptadiene -4-one	–	–	–	–	–	–	–	43	–	–
3, 5, 5-trimethyl-2-cyclohexen -1-one	–	–	–	–	–	–	–	130	–	–
3 hexen-2-one	–	–	–	–	–	6	–	–	–	–
2, 5 hexanedione	–	–	–	–	–	–	–	–	–	0.7
Dodecanoic acid	–	–	–	–	–	–	–	–	–	1.3
Hexadecanoic acid	1.5	–	–	–	–	–	–	–	–	1
Octadecanoic acid	0.9	–	–	–	–	–	–	–	–	3.8
Phenol	1.2	–	–	0.1	0.2	–	–	–	–	–
1-Hexacosanol	3.6	110	–	–	–	–	–	–	–	–
1-Hexacosene	5.8	–	–	–	–	–	–	–	–	–
3-Hexenal	–	64	–	–	–	–	–	–	–	–
Methylchlorocyclo-hexane (2 isomers)	–	–	–	–	–	–	–	61	–	–
N-nitrosodiphenyl-amine	–	–	0.4	–	–	–	–	–	–	–
Di-n-butyl phthalate	–	–	1.8	–	–	–	–	–	–	–
Bis (2-ethylhexyl) phthalate	–	–	#	–	–	0.1	–	–	–	1.5
Butylbenzyl phthalate	–	–	–	–	–	–	–	–	–	0.6
Diethyl phthalate	–	–	–	–	–	0.2	–	–	–	–
Unidentified silicone compounds	–	–	30 (6 cmpds)	1.5	9.6 (5 cmpds)					
Other hydrocarbons	–	400	–	–	–	–	1.3	–	–	–
Other unknown compounds	–	370 (3 cmpds)	–	–	–	–	–	61 (2 cmpds)	–	–

*Surface samples.
†Pesticides analyzed for were: chlordane, endrin, pp'-DDT, toxaphene, heptachlor, lindane, dieldrin, and methoxychlor.
‡Compound was not detected.
§The pesticide detected was DDT.
/Arochlor 1254.
#Level detected was not sufficiently high to quantitate.

physical examination the patient was found to have rosacea. Laboratory studies, including CBC, urinalysis, serum chemistry screen, blood lead, and FEP were within normal limits.

L.G., a 24-yr-old male, had resided with his wife (F.G.) approximately 225 m east of the incinerator since 1976. He complained of eye irritation when exposed to smoke from the incinerator, but had no other symptoms. On physical examination he was found to have an erythematous macular rash over his upper chest and neck. The patient had an elevated cholesterol level of 256 mg/100 ml and elevated triglyceride level of 319 mg/100 ml. Other laboratory tests, including serum chemistry screen, blood lead, FEP, serum PCB, and urinalysis were within normal limits.

F.G., a 24-yr-old female, complained of frequent frontal headache, blurry vision, nervousness, and an intermittent sore throat. Her past medical history was significant in that she had viral B hepatitis with four recurrences of jaundice since June, 1979. On physical examination she was found to have a macular rash over her chest and back. Laboratory tests, including a CBC, liver profile, urinalysis, blood lead, FEP, and serum PCB were within normal limits.

Veterinary examinations. Lead levels in all animal samples were within normal limits. No PCBs or PBBs were detected in the fat or liver of the various animal species at a 0.1 ppm limit of detection. The dog was found to be clinically normal. While calves at the small farm had not grown as well as previously owned calves, their rations contained a fairly poor quality hay and shelled, but uncracked corn. The two horses received adequate rations and were kept in a barn at night and suffered no noteworthy illness. The chickens were normal in outward appearance. The necropsied chicken had no significant gross lesions. On histopathology, there were accumulations of dark, irregularly shaped masses, primarily within macrophages, around airways; there were also microfocal lymphoid aggregates adjacent to the airways.

Energy dispersive X-ray analysis of the chicken's lung revealed elevated levels of aluminum, palladium, titanium, and silver. The copper content of the calves' livers was low at 6 to 16 ppm.

We could not determine whether the horses kept at the boarding stable located 1.3 km northeast of the incinerator had been receiving adequate feed. At the time of the first visit, the pasture appeared overgrazed, the oats were of poor quality, and the hay in feed bunks was in short supply. At a subsequent visit, however, the feed was plentiful and of good quality. The horses most severely affected and all those that died had been allowed to remain in the pasture located 1 km northeast of the incinerator at all times. Horses kept indoors were either unaffected or much less affected.

Several of the horses present were noticably underweight. Three had alopecia on their dorsal aspects with exfoliation and hyperemic margins; large hair-containing crusts could be peeled away. Culture failed to recover organisms apart from *Alternaria*, a contaminant. One extremely underweight animal had paraphimosis. Three of five animals' fecal samples revealed only small strongyles from 200 to 400 eggs/g. The horse identified as the "broodmare" had small strongyles, as well as *Strongylus edentatus* and *Triodontophorus sp.* with an egg count of 1700 eggs/g. Egg counts are difficult to interpret because of the temporal variability of egg shedding by intestinal parasites. There was no clinical correlation between the animals' conditions and fecal egg counts. Complete blood counts on three animals revealed no abnormalities. Serum profiles revealed consistent decreases in albumin.

Post-mortem examination of a mare that died in June, 1980, revealed a tear in the colon near the cecum with extensive secondary peritonitis. She had appeared in good flesh at the time of the initial visit, although she had been among the severely affected original group. She had given birth to a blind foal and a stunted foal. Her fecal samples had revealed small strongyles, *Strongylus edentatus*, and *Strongylus vulgaris* with an egg count of 2200 eggs/g. On post-mortem, there were pathologic anterior mesenteric artery changes consistent with *Strongylus vulgaris* larval migration. There was a fibrous band extending from the tip of the cecum to the right body wall compressing the colon. Histopathology revealed foci of macrophage accumulation in portal areas of the liver. There was mineralization of the renal tubular cells and slight thickening of Bowman's capsules and glomerular tufts. Forty-five parts per trillion (ppt) of total TCDD was detected in the mare's fat; no TCDD was detected in the mare's liver. One hundred sixty-five ppt of total TCDF was detected in the mare's fat and 57 ppt of total TCDF was detected in the mare's liver.

DISCUSSION

Our study demonstrates that a wire reclamation incinerator can be a source of environmental contamination with TCDDs and TCDFs. These compounds may have entered the incinerator intact in the fuel or charge. An alternative explanation is that they were formed in the complex chemistry of combustion from precursors found in wire insulation. Human and animal exposure to airborne TCDDs and TCDFs appears to have been very low, as indicated by the

Table 3.—Levels of Tetrachlorodibenzo-*p*-Dioxins (TCDDs) and Tetrachlorodibenzofurans (TCDFs) in Soil, Furnace, Stack, Horse Fat, and Horse Liver Samples

Sample	Total TCDDs (ppt)	Total TCDFs (ppt)
Soil No. 1	21	230
Soil No. 4*	ND (< 3 ppt)†	ND (< 3 ppt)†
Furnace No. 2	58	730
Stack No. 2	410	11,600
Horse fat	45	165
Horse liver	ND (< 6 ppt)‡	57

*Surface sample.
†Not detected at a detection limit of 3 ppt.
‡Not detected at a detection limit of 6 ppt.

trace concentrations of these residues in the ash, soil, and horse tissue samples.

The most toxic of the 22 TCDD and 38 TCDF isomers are 2, 3, 7, 8 TCDD and 2, 3, 7, 8 TCDF. The LD_{50}'s of these compounds are in the order of micrograms per kilogram in many animal species. 2, 3, 7, 8 TCDD is a multisystem toxin, teratogen, fetotoxin, and carcinogen.[18] The dose-response relationships of these compounds in humans and horses are largely unknown. As we were only able to measure total TCDDs and TCDFs, we do not know whether the highly toxic 2, 3, 7, 8 isomers were present in our samples.

We concluded that many of the acute human health effects in the present case were caused by exposure to air pollutants commonly found in the smoke emitted by improperly controlled wire reclamation incinerators. These pollutants include carbon monoxide, halides, nitrogen oxides, sulfur oxides, and other pyrolysis products.[1,3] There was no evidence of lead, copper, or silver poisoning in the humans or animals. We could not establish a definite association between the human health effects and the exposure to trace amounts of TCDDs and TCDFs. One person had longstanding acne vulgaris, but neither he nor any of the others had a condition resembling chloracne. While visual disturbances, nystagmus, and polyneuropathy have been previously described in persons exposed to 2, 3, 7, 8 TCDD,[18] the present exposure appears to have been much lower than in the previous cases.

The presence of trace amounts of TCDDs and TCDFs in the horse tissue is evidence of exposure rather than intoxication. The absence of TCDDs and TCDFs in the pasture soil sample suggests that inhalation may have been an important route of exposure. There are no data on the kinetics, metabolism, and critical concentrations of TCDDs and TCDFs in horses. The symptoms in the affected horses were remarkably similar to those described in a previous TCDD poisoning episode.[19,20] In the previous episode, however, the horses had been exposed to soil contaminated with part per million levels of TCDDs; no tissue levels of TCDD were available from those horses for comparison.

TCDDs and TCDFs have previously been detected in the fly ash of municipal and industrial incinerators.[4-6,8] Operators of wire reclamation facilities should be aware that the potential exists for the emission of these compounds from wire reclamation incinerators. Data collected to date on the toxic, carcinogenic, teratogenic, and fetotoxic potential of the 2, 3, 7, 8 isomers warrant concern over trace environmental contamination with TCDDs and TCDFs.

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20. Kimbrough, R.D.; Carter, D.C.; Liddle, J.A.; Cline, R.E.; and Phillips, P.E. 1977. Epidemiology and pathology of a tetrachlorodibenzodioxin poisoning episode. *Arch Environ Health* 32: 77-86.

Reference XI

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO D' RS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

In permit book: Faith Processing

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 145 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. 5 in. Depth 68 ft.
   c. Drilled _____. Finished in Drift _____. In Rock _____.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 20 Ft. Seepage Tile Field 75
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 10-25-74
5. Permanent Pump Installed? Yes X Date 10-27-74 No____
   Manufacturer Weiute Type _____ Location _____
   Capacity 10 gpm. Depth of Setting _____ Ft.
6. Well Top Sealed? Yes X No____ Type _____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Mattison Model Number S-10
   How attached to casing? Lockwt
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 42 gal. Type WL-202
    Location Crawlspace
11. Water Sample Submitted? Yes____ No____

REMARKS:

10. Property owner Faith Metal Products Well No. 849
    Address Crete, Ill
    Driller HART License No. 102-48
11. Permit No. 34194 Date 10-24-74
12. Water from Limestone Formation 13. County Will
    at depth 68 to 145 ft. Sec. 15 SD
14. Screen: Diam. _____ in. Twp. 34N
    Length: _____ ft. Slot _____ Rge. 14E
    Elev. _____

SHOW LOCATION IN SECTION PLAT

NW NW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	BLACK	0	68

16. Size Hole below casing: _____ in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay & Gravel	0	68
Limestone	68	145

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Peter Kolb DATE 11-21-74

Will DuPage Drlg.

IDPH 4.065
1/74 – KNB-1

The following is an explanation of the ISWS Private Well Database Printout.

```
                Illinois State Water Survey: Report from the Private Well Database

COLUMN =>           1         2         3         4         5         6         7         8         9
#'s    =>  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
           171     13N11W063ASTEVE WISDOM                  BERGSCHNEIDER       0718979M0878550052L  DO
```

Columns	Field Length	Name	Description
1-3	3	FIPS	County Code Number

FIPS means Federal Information Processing System and is a Federal number to designate a county.

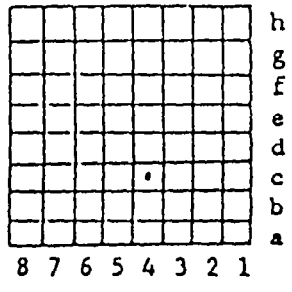
4-8	5	SGS County number	

SGS County number is the Geological Survey ID# that is assigned as an internal identification number.

9-18	10	Location	Township columns 9-11 Range columns 12-14 Section columns 15-16 Plot columns 12-18

The location system uses the township, range, and section. The location consists of five parts: county, township, range, section, and coordinate within the section. Sections are divided into rows of 1/8-mile squares. Each 1/8-mile square contains 10 acres and corresponds to a quarter of a quarter of a quarter section. A normal section of 1 square mile contains 8 rows of 1/8-mile squares; an odd-sized section contains more or fewer rows. Rows are numbered from east to west and lettered from south to north as shown in the diagram.

St. Clair County
T.2N., R.10W.
Sec. 23



The location of the well shown above is STC 2N10W-23.4c. Where there is more than one well in a 10-acre square they are identified by arabic numbers after the lower-case letter in the well number.

Columns	Field Length	Name	Description
19-48	30	Owner	
49-68	20	Driller	
69-75	7	Date	Month columns 69-70 Day columns 71-72 Century columns 73 Year columns 74-75
76	1	Permit code letter indicates agency which issued permit #. M Mines and Minerals (after 1988 only observation wells and irrigation wells) P Public Health - all non-community supplies E EPA - Community supplies N No fee X Undetermined	
77-82	6	Permit number	
83-86	4	Depth (in feet)	
87-90	4	Record type - Indicates paper source that documents the well exists, since records were collected before well log submittal was required. L Log A Affidavit C Chemical analysis I Inventory X Indicates comment in owner field something unusual	
91-92	2	Well use - A two letter code indicating the usage of the well CM Commercial CO Conservation DO Domestic IN Industrial IR Irrigation MO Monitoring MU Municipal NC Non-Community OB Observation PK Park SC School ST State	

Columns	Field Length	Name	Description
93-94	2	Well type -	A two letter code indicating the type of well
			Blank - Assumed drilled
			BD Bored and dug
			DU Dug (being phased out)
			DR Driven
			SP Sand point
			SG Spring
95-96	2	Aquifer type -	A two letter code indicating aquifer type
			BR Bedrock
			UN Unconsolidated

The data in the Private Well Inventory Database is a listing of those non-municipal wells which are known to the Illinois State Water Survey (ISWS). This information has been entered verbatim from well logs submitted by the driller, from chemical analysis reports, from well sealing forms or well inventory forms from the 1930-34 well survey and other special projects. The accuracy of this data is controlled by those who submitted the form. Information in the private well database has not been field verified.

The data in the Private Well Inventory Database is a listing of those non-municipal wells which are known to the Illinois State Water Survey (ISWS) This information has been entered variously from well logs submitted by the driller, from chemical analysis reports, from well sealing forms or well inventory forms from the 1930-1934 well survey and other special projects. The accuracy of this data is controlled by those who submitted the form. Information in the private well database has not been verified.

County: Will

Locations Involved in Search

TWN	RNG	SEC	PLOT
34N	14E	01	*
34N	14E	02	*
34N	14E	03	*
34N	14E	04	*
34N	14E	05	*
34N	14E	06	*
34N	14E	07	*
34N	14E	08	*
34N	14E	09	*
34N	14E	10	*
34N	14E	11	*
34N	14E	12	*
34N	14E	12	*
34N	14E	13	*
34N	14E	14	*
34N	14E	15	*
34N	14E	16	*
34N	14E	17	*
34N	14E	18	*
34N	14E	20	*
34N	14E	21	*
34N	14E	22	*
34N	14E	23	*
34N	14E	24	*
34N	14E	27	*
34N	14E	28	*

Illinois State Water Survey: Report from the Private Well Database, 09/11/90 , Page 1

1 2 3 4 5 6 7 8 9
0123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

197	34N14E01	DUBOIS C	HOLLEMAN	0501971012164150	L	DO*****
197	34N14E01	PIEPENBRINK W	BAHLMAN	0000906 135	L	DO*****
197	34N14E01	CHRIST F	TATTERWILL	0000949 105	L	DO*****
197	34N14E01	TOWNEY	TATTERWILL	0000000 123	L	DO*****
197	34N14E01	STOYNOF P	STINNETT	1031968004343162	L	DO*****
197	34N14E01	VARCHAK G	STINNETT	1031968004342160	L	DO*****
197	34N14E01	RATKOVICH S	STINNETT	0316969005856150	L	DO*****
197	34N14E01	RATKIVICH S	STINNETT	0927968005855160	L	DO*****
197	34N14E01	MARTELLO J	SHARPE	0612984109380180	L	DO*****
197	34N14E011DVERMEAT R		HOLLEMAN	0514976046125200	L	DO*****
197	34N14E011DMOELLER E		HOLLEMAN	0315978071744175	L	DO*****
197	34N14E011EPONSA E		BAHLMAN	070904 95	L	DO*****
197	34N14E011HSTARR R		WEHLING	0502969007256160	L	DO*****
197	34N14E012DJOHNSON P		HOLLEMAN	0501976046126185	L	DO*****
197	34N14E012CNOLAN J		HOLLEMAN	0331978071745185	L	DO*****
197	34N14E018APIEPENBRICK H		WEHLING	0421972017016170	L	DO*****
197	34N14E02	OUTERLING L	WEHLING	0000950 162	L	DO*****
197	34N14E02	CROWLEY E	HOLLEMAN	0525972017429160	L	DO*****
197	34N14E025HMCGREGORY W		SHARPE	0512976047868150	L	DO*****
1972843034N14E026ASEPPELLOWE A			KNIERIM	0622985118557130	L	DO*****
197	34N14E026CLYNBY C		LOCKPORT	1201974034988265	L	DO*****
197	34N14E027CMARKONIC T		KNIERIM	0300973022128153	L	DO*****
197	34N14E028AMITCHELLTREE W		WEHLING	1008968006030162	L	DO*****
197	34N14E028AMITCHELLTREE W		WEHLING	1008969006030175	L	DO*****
197	34N14E03	LIGLER E	WEHLING	0000947 147	L	DO*****
197	34N14E03	MARTING W	KRAMER	0000940 138	LC	DO*****
197	34N14E03	KEATING E	KRAMER	0000940	L	DO*****
197	34N14E03	FETTEL C	KRAMER	0000940	L	DO*****
197	34N14E03	JOHANNSEN A	WORTH	0000942 150	L	DO*****
197	34N14E03	BROWN R	WEHLING	0200966 171	L	DO*****
197	34N14E03	ALLEN R	WEHLING	0428967001825161	L	DO*****
197	34N14E03	TERJAC CONST	WEHLING	0531968004991151	L	DO*****
197	34N14E03	EGGANA J	HOLLEMAN	0000968005283180	L	DO*****
197	34N14E03	RANIC K	HOLLEMAN	1001971014404159	L	DO*****
197	34N14E03	SHYMKUS J	WEHLING	0716973024050151	L	DO*****
197	34N14E03	SCHLEUTER R LOT 4	HOLLEMAN	0416974028079165	L	DO*****
197	34N14E03	HARRETT BLDR LOT10	KNIERIM	0105976043927140	L	DO*****
197	34N14E03	FESKO J LOT 12	HOLLEMAN	0203977056134165	L	DO*****
197	34N14E03	WALKEY G	HOLLEMAN	1025977067623165	L	DO*****
1972906934N14E03		PATTENS C	SHARPE	0822986126044180	L	DO*****
1972835334N14E03		VANDER P	SHARPE	0710985117270180	L	DO*****
1972888534N14E03		GRAHAM T NOT DRILLED	SHARPE	1128987124148	LX	DO*****
1972936134N14E03		PIUNTI J	SHARPE	0212987129315180	L	DO*****
197	34N14E03	STEVENS B LOT 12	SHARPE	0308984110852180	L	DO*****
197	34N14E03	ASHBRENNER	WEHLING	0900965 161	LIC	DO*****
197	34N14E03	DOROSH J LOT 3	HOLLEMAN	0518974029625160	L	DO*****
197	34N14E03	NICOLLAZI A LOT 15	SHARPE	1026984114893180	L	DO*****
197	34N14E03	LEINSE E LOT 1	SHARPE	0625975038442160	L	DO*****
197	34N14E03	MARTING W	KRAMER	0000940 138	L	DO*****
197	34N14E033EBACIK J		WEHLING	0925968005688172	L	DO*****
197	34N14E033EKENNEDY D		WEHLING	0510969007149162	L	DO*****
197	34N14E034FGRABOW J		WEHLING	1116972020853161	L	DO*****
197	34N14E035DGIBBS M		WEHLING	0504973022271161	L	DO*****
197	34N14E035DSCHNEIDER(MARSTON J)		WEHLING	0909968005661173	L	DO*****
197	34N14E035DTREIM L		WEHLING	1002968005660200	L	DO*****
197	34N14E035ERACZ R		WEHLING	0523972017712162	L	DO*****

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         1         2         3         4         5         6         7         8         9
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E035ETREEHOFF BLDRS              WEHLING            1001970010601161 L   DD******
197     34N14E036AFOEEMAN L                   HOLLEMAN           0711976049391130 L   DD******
197     34N14E036ABIERCZYK J LOT 6            WEHLING            0863979087894155 L   DD******
197     34N14E036BDORICH R LOT 1              WEHLING            1006977067753140 L   DD******
1972886634N14E036CGRAHAM T                    WEHLING            0528986126866160 L   DD******
197     34N14E036DGREENSPIER SEWAGE PLANT     WEHLING            0227968004323101 L   CM******
197     34N14E037BKOCKER H                    WEHLING            0818969005662167 L   DD******
197     34N14E037CMAGLE H                     WEHLING            1023973025074161 L   DD******
197     34N14E037FWARNOCK C                                      0000987      100 C   DD******
197     34N14E038AAMRAM J                     WEHLING            0717968005356152 L   DD******
197     34N14E038DGARRETT J                   WEHLING            0715969005458150 L   DD******
197     34N14E038DRICHARDSON R                WEHLING            0327974028215151 L   DD******
197     34N14E038DROMANDRINE P                WEHLING            1011976052456152 L   DD******
1972875734N14E038GKMETTY G                    SHARPE             0440698122817180 L   DD******
197     34N14E04  GARRETT BLDRS               KNIERIM            0325976043925160 L   DD******
197     34N14E04  SCHREMENTI J                HOLLEMAN           0000966      157 L   DD******
197     34N14E04  GARRETT J                   KNIERIM            0105976043926140 L   DD******
197     34N14E04  GREVEN R                    SHARPE             0325976044199150 L   DD******
197     34N14E041ABRUIN W LOT 1               WEHLING            0617969007632152 L   DD******
197     34N14E043CCHAPMAN BLDRS               KNIERIM            0401976043996150 L   DD******
197     34N14E044AKING J                      WEHLING            0905967003360150 L   DD******
197     34N14E044BBLJEZERNICH R LOT 17        STINNETT           0717980094576B8  L   DD******
197     34N14E045HSOUCIE D                    WEHLING            0909974031507171 L   DD******
197     34N14E048ASPANO OPEN AIR MARKET       WEHLING            0618977061240200 L   CM******
197     34N14E048HFIRTH D                     KNIERIM            0706984113223180 L   DD******
197     34N14E04__PASLELLA A                  WEHLING            0000944      116 L   DD******
197     34N14E05  WHITE J                     JAHNS              0000925      86  L   DD******
197     34N14E05  COLEMAN W                   WEHLING            0000949      167 L   DD******
197     34N14E05  CANNON J                    WEHLING            0000949      131 L   DD******
197     34N14E05  LICKFERN W                  WEHLING            0000949      122 L   DD******
197     34N14E05  MOELLER C                   WEHLING            0000949      111 L   DD******
197     34N14E05  SHERIDAN T                  WEHLING            0000944      111 L   DD******
197     34N14E05  WITHERS R                   HOLLEMAN           0000966      155 L   DD******
197     34N14E05  AEBI C                      WEHLING            0706967002847153 L   DD******
197     34N14E05  REGAN P                     HOLLEMAN           0000969006529168 L   DD******
197     34N14E05  TIDD N                      HOLLEMAN           0420971012090120 L   DD******
197     34N14E05  DEFESE G LOT 42             HOLLEMAN           1101973025717165 L   DD******
197     34N14E05  BUXTEN LOT 22               HOLLEMAN           0321974025452175 L   DD******
197     34N14E05  WOENER S                    HOLLEMAN           0621975038168200 L   DD******
197     34N14E05  LSD CONST                   SHARPE             0228974027647150 L   DD******
1972917934N14E056BCRUMBAUGH L                 SHARPE             1028986127568200 L   DD******
197     34N14E056CHELSEL R                    WEHLING            0916971014569162 L   DD******
1972832934N14E057ACAVE G                      SHARPE             0401985116795160 L   DD******
197     34N14E057CSTAREGO C                   WEHLING            1107969008652160 L   DD******
197     34N14E058BCRUMBOUGH L                 WEHLING            0829970010288181 L   DD******
197     34N14E058BGRIMMETT C                  KNIERIM            0823978078627160 L   DD******
197     34N14E058BHARTMAN H                   WEHLING            0105979082959181 L   DD******
197     34N14E058GWILSHAR HOMES               WILL DUPAGE CO     1224978082887190 L   DD******
197     34N14E06  BOCK A                      JAHNS              0000920      114 L   DD******
197     34N14E06  RIESSEN P                   JAHNS              0000921      111 L   DD******
197     34N14E06  THOMPSON                    JAHNS              0000921      115 L   DD******
197     34N14E06  SULIVAN E                   WEHLING            0000949      137 L   DD******
197     34N14E06  VOIGT T                     HOLLEMAN           0210973020937202 L   DD******
1972935034N14E06  STREIB L                    SHARPE             0407987129131180 L   DD******
197     34N14E06  OHLEMBURG D                 WEHLING            0000980          L   DD******
197     34N14E06  MAHNKE A                    HOLLEMAN           0000966      170 L   DD******
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         1         2         3         4         5         6         7         8         9
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E06  CAMALI R                  WEHLING         0201968004205156 L   DO*****
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197     34N14E06  GREENSPAN S               HOLLEMAN        1024978077267200 L   DO*****
197     34N14E06  AGUIGZI L                 HOLLEMAN        0611973022139200 L   DO*****
197     34N14E06  JONES E                   FOYLE           0106977056550120 L   DO*****
197     34N14E06  YOUNG G                   KNIERIM         1026973026178180 L   DO*****
197     34N14E06  COLLESTER R               HOLLEMAN        0823982104430200 L   DO*****
197     34N14E06  SCHMECKPEPER W            HOLLEMAN        0706981100369200 L   DO*****
197     34N14E06  STREIB L                  SHARPE          0913983109143200 L   DO*****
197     34N14E061DSMITH J                   KNIERIM         0831974031926200 L   DO*****
1972370934N14E061FJEPPERSON C               SHARPE          0218986122098200 L   DO*****
197     34N14E062ETAYLOR J                                  0000956      143 C   DO*****
197     34N14E062EDERKS BLDRS               KNIERIM         1116978080441115 L   DO*****
197     34N14E063AROSSI V                   SHARPE          0803977062508180 L   DO*****
197     34N14E064DLINDHOUT T                SHARPE          0318978071823200 L   DO*****
197     34N14E064GTUVNSENDY R               KNIERIM         0700970010098220 L   DO*****
197     34N14E065EDIENER T                  FOYLE           1210968006074170 L   DO*****
197     34N14E065EFRANEZYK J                HOLLEMAN        0628973023249200 L   DO*****
197     34N14E065GSTOCKING L                HOLLEMAN        0619975036768190 L   DO*****
197     34N14E066AHOWARD F                  STINNETT        0904979089187116 L   DO*****
197     34N14E067HPEIGUSS F                 KNIERIM         0502978072291160 L   DO*****
197     34N14E068ACAHOON B                  SHARPE          1027984115549200 L   DO*****
197     34N14E068HPEIGUSS F                 KNIERIM         0117972016118180 L   DO*****
197     34N14E068HFORBES G                  HOLLEMAN        0824981100993180 L   DO*****
197     34N14E068HVADER C                   WILL DUPAGE CO  0815977065234175 L   DO*****
1972892934N14E068HTIERI F                   KNIERIM         0613986124471200 L   DO*****
197     34N14E07  ZUBERG J                  WEHLING         0000948       90 L   DO*****
197     34N14E07  CASSARA J                 WEHLING         0000948      131 L   DO*****
197     34N14E07  BROOKS J                  WEHLING         0000949      122 L   DO*****
197     34N14E07  CSSARA A                  WEHLING         0000948      160 L   DO*****
197     34N14E07  ALBRIGHT E                                0000945      127 L   DO*****
197     34N14E07  APRILLE S                 WEHLING         0000945      115 L   DO*****
197     34N14E07  SCHIRRA C                 SASS            0000915       91 L   DO*****
197     34N14E07  CASSARA F                 WEHLING         0000948      136 L   DO*****
197     34N14E07  SCHRAGGE E                WEHLING         0000945      155 L   DO*****
197     34N14E07  MIKUTA J                  WEHLING         1000965      161 L   DO*****
197     34N14E07  PARKE D                   WEHLING         0600966      146 L   DO*****
197     34N14E07  SROMEK V                  HOLLEMAN        0000967      160 L   DO*****
197     34N14E07  URNEZ W                   WEHLING         0728967002619136 L   DO*****
197     34N14E07  RUBY W                    HOLLEMAN        0000967      173 L   DO*****
197     34N14E07  MONTETON R                STINNETT        0503968004793150 L   DO*****
197     34N14E07  MERKLE M                  HOLLEMAN        0000969006807173 L   DO*****
197     34N14E07  MICHELS T                 HOLLEMAN        0000969      158 L   DO*****
197     34N14E07  DAVIS J                   WEHLING         1001969008221181 L   DO*****
197     34N14E07  ZONA N                    HOLLEMAN        0530972017086154 L   DO*****
197     34N14E07  PRINCE                    WILL DUPAGE CO  0628973017207150 L   DO*****
197     34N14E07  DALE BLDRS                SHARPE          1007974032658175 L   DO*****
197     34N14E07  KNAACK E                  HOLLEMAN        0715982103715150 L   DO*****
197     34N14E07  ZONA N                    HOLLEMAN        0801979088097160 L   DO*****
197     34N14E07  WESTON L                  HOLLEMAN        0615973021237163 L   DO*****
197     34N14E07  PERINO J                  SHARPE          1106974034375200 L   DO*****
1972845834N14E07  NORTON R                  SHARPE          0715985113909200 L   DO*****
197     34N14E07  PRIPTIED P                SHARPE          0622976048509180 L   DO*****
197     34N14E07  SROMEK V                  HOLLEMAN        0825981100995160 L   DO*****
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         1         2         3         4         5         6         7         8         9
123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197      34N14E071DMORRIS J                     HOLLEMAN            0528973022690165 L  DO*****
197      34N14E071HDACARTE E                    HOLLEMAN            0709982103807160 L  DO*****
197      34N14E072EMEADWOOD ELE SCHOOL          WEHLING             0000960      300 LC DO*****
197      34N14E072HWILSHAR HOMES                KNIERIM             1130977066339127 L  DO*****
197      34N14E074HBREVEN R                     WEHLING             0107971012230171 L  DO*****
197      34N14E075DCASSARA F                    WEHLING             1005983109574135 L  DO*****
197      34N14E076FIZENBIARK R                  WEHLING             0314975036373141 L  DO*****
197      34N14E077ALEIMER W                     WEHLING             0821969008084152 L  DO*****
197      34N14E077DNEILIP R                     WEHLING             0913971013527136 L  DO*****
197      34N14E077EKEFFEL F                     WEHLING             1003984114944160 L  DO*****
197284434N14E077HNEDLSEN H                      KNIERIM             0703985118727180 L  DO*****
197      34N14E078EPLBENBING K                  KNIERIM             0700970010221250 L  DO*****
197285634N14E078EJOEL CONST                     KNIERIM             0913985120302140 L  DO*****
197      34N14E078GDULL T                       WEHLING             0603969007505153 L  DO*****
197      34N14E08  CARWIN G                     WEHLING             0000948      144 L  DO*****
197      34N14E08  HAFER E                      WEHLING             0000947      184 L  DO*****
197      34N14E08  BADER L                      WEHLING             0000946      123 L  DO*****
197      34N14E08  BUCHMEIER H                  HOLLEMAN            0000965      163 L  DO*****
197      34N14E08  GAINES C                     HOLLEMAN            1212973026602170 L  DO*****
197299534N14E08  WOMMACK M                      SHARPE              1005987135442240 L  DO*****
197      34N14E08  GAINES C                     HOLLEMAN            0402974027790165 L  DO*****
197      34N14E08  FALLA D                      SHARPE              0524977057817160 L  DO*****
197      34N14E08  FRALLE DAIRY                 THORNE              0000935      265 IC DM*****
197      34N14E081AGAINES C                     WEHLING             0500960      161 L  DO*****
197      34N14E081GM AND G                      WEHLING             1126975043003141 L  DO*****
197      34N14E082CMURKS J                      WEHLING             0210969006783163 L  DO*****
197      34N14E084CGAINES R                     KNIERIM             1012979088495160 L  DO*****
197      34N14E085CWOLF V                       WEHLING             0525973022632161 L  DO*****
197      34N14E085GRANSOM E                     WEHLING             1023968006167121 L  DO*****
197      34N14E086EHACKEL M                     SHARPE              1016984115196180 L  DO*****
197      34N14E09  LONG D                       CASKEY              0000930      115 L  DO*****
197      34N14E09  JUNGE H                      CASKEY              0000931      133 L  DO*****
197      34N14E09  HOWARD L                     KRAMER              0000932      137 L  DO*****
197      34N14E09                               KRAMER C            0000928      107 L  DO*****
197      34N14E09  ALLORD                       KRAMER              0000929      130 L  DO*****
197      34N14E09  LINCOLNSHIRE COUNTRY CLUB    KRAMER              0000929      134 L  DO*****
197      34N14E09  LINCOLNSHIRE COUNTRY CLUB    KRAMER              0000929      128 L  DO*****
197      34N14E09  CHRISTOPHER B                WEHLING             0000949      116 L  DO*****
197      34N14E09  NEWELL                       WEHLING             0000942       99 L  DO*****
197      34N14E09  MASHBURN S                   SHARPE              0930979090053110 L  DO*****
197      34N14E09  KING J                       HOLLEMAN            0825974032132162 L  DO*****
197      34N14E09  MONT WARD HOUSE              KRAMER              0000932      130 L  DM*****
197      34N14E093FJUSTICE W                    KNIERIM             0330971012019160 L  DO*****
197      34N14E098ABAMMANN D                    WEHLING             0828968005711203 L  DO*****
197      34N14E098ENADLER W                     WEHLING             1201971015464147 L  DO*****
197      34N14E10  THRAMER W                    BAHLMAN             0500906      115 L  DO*****
197      34N14E10  EPHGRAVE J                   WEHLING             0207978070850161 L  DO*****
197      34N14E105ANEALE H                      WEHLING             0611968005083152 L  DO*****
197      34N14E106ESASAKI J                     WEHLING             111097201957997  L  DO*****
197      34N14E106EMONTGOMERY IMPROVEMENTS      WEHLING             0809968005355205 L  DO*****
197286134N14E107GPEREZ C                        WEHLING             1024985120969135 L  DO*****
197      34N14E11  MEIER W                      WEHLING             0000945      205 L  DO*****
197      34N14E11  TRIEBOLD W                   WEHLING             0000984          L  DO*****
197      34N14E11  HOLLEMAN                     HOLLEMAN            0000966      136 L  DO*****
197      34N14E11  PROSTKO H                    HOLLEMAN            0000968      152 L  DO*****
197      34N14E11  ZUIRAITIS A                  HOLLEMAN            0000968      163 L  DO*****
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        1         2         3         4         5         6         7         8         9
12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E11  SIMONCUTIS G                    HOLLEMAN          0630970008803163 L   DO******
197     34N14E11  ICARED M                        HOLLEMAN          0910970      150 L   DO******
197     34N14E11  MEIER M                         WEHLING           0000982          L   DO******
197     34N14E11  TROCKULUK M                     HOLLEMAN          1028971014682160 L   DO******
197     34N14E11  PETREUST F                      HOLLEMAN          0910972019190162 L   DO******
197     34N14E11  VANDERWALL M                    HOLLEMAN          1125973026391160 L   DO******
197     34N14E11  PILNEY J                        HOLLEMAN          0616975036942160 L   DO******
197     34N14E11  REETWELD J                      HOLLEMAN          1020975041699160 L   DO******
197     34N14E11  COMMONWEALTH EDISON             WEHLING           0000957      202 L   CM******
197     34N14E11  COMMONWEALTH EDISON             WEHLING           0000957      300 L   CM******
197     34N14E111FYOUNG G                         HOLLEMAN          0715971012165140 L   DO******
197     34N14E111HWACLAWEK A                      HOLLEMAN          0000968005875163 L   DO******
197     34N14E112CRIPLEY HOME                     KNIERIM           1105976053878140 L   DO******
197     34N14E112GDERRY T                         HOLLEMAN          0310978071743160 L   DO******
197     34N14E116ETOLLESUD E                      WEHLING           0119971011707121 L   DO******
197     34N14E12  MCBRIEN R                       WEHLING           0000947       92 L   DO******
197     34N14E12  SEINKO E                        HOLLEMAN          0000966      185 L   DO******
197     34N14E12  IONICA P                        HOLLEMAN          0000966      143 L   DO******
197     34N14E12  IWRONT G                        HOLLEMAN          0000968      165 L   DO******
197     34N14E12  MALANE B                        HOLLEMAN          0000968      165 L   DO******
197     34N14E12  EVANS R                         STINNETT          0210969006719180 L   DO******
197     34N14E12  SOOT N                          HOLLEMAN          0000969007585164 L   DO******
197     34N14E12  KAMIS E                         HOLLEMAN          0000969006793152 L   DO******
197     34N14E12  KAMIS J                         HOLLEMAN          0000969006792195 L   DO******
197     34N14E12  QUINLAN M                       SHARPE            1118977069360180 L   DO******
197     34N14E12  RIGONI V                        SHARPE            0924977065489160 L   DO******
197     34N14E12  SPEGON W                        HOLLEMAN          0715969007587160 L   DO******
197     34N14E12  TURNROOS B                      HOLLEMAN          0730970010159155 L   DO******
197     34N14E12  SLAGER J                        HOLLEMAN          0816971012928156 L   DO******
197     34N14E12  ALOIA E                         HOLLEMAN          0920971013270158 L   DO******
197     34N14E12  MARSIGLIO L                     HOLLEMAN          1002972019186160 L   DO******
197     34N14E12  OLD TOWN BLDRS(WIRTH)           WILL DUPAGE CO    0626973021922160 L   DO******
197     34N14E12  RIETWELD P                      HOLLEMAN          0903975040237160 L   DO******
197     34N14E12  RIETWELD R                      HOLLEMAN          0910975040661160 L   DO******
197     34N14E12  RIGGIS J                        HOLLEMAN          0819975040240175 L   DO******
197     34N14E12  TARALA J                        KNIERIM           1019977067967100 L   DO******
197     34N14E12  PEMIGENBUG J                    HOLLEMAN          1018977066282160 L   DO******
197     34N14E12  FOBERG B                        HOLLEMAN          1220977070243165 L   DO******
197     34N14E12  LUTKUS R                        HOLLEMAN          0605978074331165 L   DO******
197     34N14E12  RAGGENEEN J                     HOLLEMAN          1209978082596160 L   DO******
197     34N14E12  ROBY D                          SHARPE            1223977070119180 L   DO******
197     34N14E12  BOND BLDRS                      SHARPE            1029977059267160 L   DO******
197     34N14E12  RUTWELD P                       HOLLEMAN          0920981101349160 L   DO******
19720847434N14E12 AERTS J                         SHARPE            0726985119219160 L   DO******
197     34N14E12  MALANE B                        HOLLEMAN          0000968      165 L   DO******
197     34N14E12  EVANS R                         STINNETT          0210969006719180 L   DO******
197     34N14E12  SOOT N                          HOLLEMAN          0000969007585164 L   DO******
197     34N14E12  KAMIS E                         HOLLEMAN          0000969006793152 L   DO******
197     34N14E12  KAMIS J                         HOLLEMAN          0000969006792195 L   DO******
197     34N14E12  QUINLAN M                       SHARPE            1118977069360180 L   DO******
197     34N14E12  RIGONI V                        SHARPE            0924977065489160 L   DO******
197     34N14E12  SPEGON W                        HOLLEMAN          0715969007587160 L   DO******
197     34N14E12  TURNROOS B                      HOLLEMAN          0730970010159155 L   DO******
197     34N14E12  SLAGER J                        HOLLEMAN          0816971012928156 L   DO******
197     34N14E12  ALOIA E                         HOLLEMAN          0920971013270158 L   DO******
197     34N14E12  MARSIGLIO L                     HOLLEMAN          1002972019186160 L   DO******
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1	2	3	4	5	6	7	8	9
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890								
197	34N14E12	OLD TOWN BLDRS(WIPTH)		WILL DUPAGE CO		1826973021922160	L	DO******
197	34N14E12	RIETWELD P		HOLLEMAN		0903975040237160	L	DO******
197	34N14E12	RIETWELD R		HOLLEMAN		1910975040611160	L	DO******
197	34N14E12	RIGGIS J		HOLLEMAN		0819975040240175	L	DO******
197	34N14E12	TARALA J		KNIERIM		1019977067967160	L	DO******
197	34N14E12	HAEMKER P		WEHLING		0000977	L	DO******
197	34N14E12	FOBERG B		HOLLEMAN		1220977070243165	L	DO******
197	34N14E12	LUTKUS R		HOLLEMAN		0605978074331165	L	DO******
197	34N14E12	RAGGENEEN J		HOLLEMAN		1209978082596160	L	DO******
197	34N14E12	ROBY D		SHARPE		1223977070119180	L	DO******
197	34N14E12	BOND BLDRS		SHARPE		1029977059267160	L	DO******
197	34N14E12	RUTWELD P		HOLLEMAN		0920981101349160	L	DO******
197	34N14E12	HAEMKER P		WEHLING		0000977	L	DO******
197	34N14E12	FEMIGENBUG J		HOLLEMAN		1018977066282160	L	DO******
197	34N14E12	IONICA P		HOLLEMAN		0000966 143	L	DO******
197	34N14E12	IWRONT G		HOLLEMAN		0000968 165	L	DO******
197	34N14E12	MCBRIEN R		WEHLING		0000947 92	L	DO******
197	34N14E12	SEINKO E		HOLLEMAN		0000966 185	L	DO******
1972247	34N14E12	AERTS J		SHARPE		0726985119219160	L	DO******
197	34N14E122AARRE CONS			KNIERIM		0730980092575150	L	DO******
197	34N14E122AARRE CONS			KNIERIM		0730980095375150	L	DO******
197	34N14E122CERICKSON E			HOLLEMAN		0701978070237185	L	DO******
197	34N14E122CBIGGERSTAFF			KNIERIM		0729970010216180	L	DO******
197	34N14E122CBIGGERSTAFF			KNIERIM		0729970010216180	L	DO******
197	34N14E122CERICKSON E			HOLLEMAN		0701978070237185	L	DO******
197	34N14E122FCHAPMAN BLDRS			KNIERIM		1230976055685270	L	DO******
197	34N14E122FCHAPMAN BLDRS			KNIERIM		1230976055683270	L	DO******
197	34N14E123AKATNOS T			SHARPE		1115973026097190	L	DO******
197	34N14E123AKATNOS T			SHARPE		1115973026097190	L	DO******
197	34N14E124AHANSEN K			WEHLING		0814974032023176	L	DO******
197	34N14E124AHANSEN K			WEHLING		0814974032023176	L	DO******
197	34N14E124CPIERCE K			STINNETT		0502979084278122	L	DO******
197	34N14E124CPIERCE K			STINNETT		0502979084278122	L	DO******
197	34N14E125ACHAPMAN BLDRS			KNIERIM		0826978078601150	L	DO******
197	34N14E125ACHAPMAN BLDRS			KNIERIM		0826978078601150	L	DO******
197	34N14E125BREICHERT R			WEHLING		1231969008836161	L	DO******
197	34N14E125BREICHERT R			WEHLING		1231969008836161	L	DO******
197	34N14E125BREICHERT R			WEHLING		1226969008837161	L	DO******
197	34N14E125BREICHERT R			WEHLING		1226969008837161	L	DO******
197	34N14E125BREICHERT R			WEHLING		1218969008838161	L	DO******
197	34N14E125BREICHERT R			WEHLING		1218969008838161	L	DO******
197	34N14E125CNOMMENSEN H			WEHLING		0110970008916161	L	DO******
197	34N14E125CBATTASLIA J			WEHLING		0207972014567161	L	DO******
197	34N14E125CREINKING G			WEHLING		013197214568 161	L	DO******
197	34N14E125CNOMMENSEN H			WEHLING		0110970008916161	L	DO******
197	34N14E125CYEAGLE M			WEHLING		0824970009605161	L	DO******
197	34N14E125CREINKING G			WEHLING		013197214568 161	L	DO******
197	34N14E125CPAWALSKI H			WEHLING		0928971014313161	L	DO******
197	34N14E125CYEAGLE M			WEHLING		0824970009605161	L	DO******
197	34N14E125CBATTASLIA J			WEHLING		0207972014567161	L	DO******
197	34N14E125CPAWALSKI H			WEHLING		0928971014313161	L	DO******
197	34N14E125DCARTA K			WEHLING		0512973023037161	L	DO******
197	34N14E125DTRAISE T			WEHLING		0602971012502161	L	DO******
197	34N14E125DJACKSON W			WEHLING		0911970010374212	L	DO******
197	34N14E125DCARTA K			WEHLING		0512973023037161	L	DO******
197	34N14E125DTRAISE T			WEHLING		0602971012502161	L	DO******

Illinois State Water Survey: Report from the Private Well Database, 09/11/90 ; Page 7

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         1         2         3         4         5         6         7         8         9
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E125DJACKSON W                    WEHLING             0911970010374212 L   DO*****
197     34N14E126DVUKODINIVICK G               WEHLING             0803971012503160 L   DO*****
197     34N14E126CBAUER C                      WEHLING             0221972015808161 L   DO*****
197     34N14E126CBAUER C                      WEHLING             0221972015808161 L   DO*****
197     34N14E126CCANNON T                     WEHLING             0807971013646160 L   DO*****
197     34N14E126CCANNON T                     WEHLING             0807971013646160 L   DO*****
197     34N14E126CREICHERT BLDRS               WEHLING             1116977067751161 L   DO*****
197     34N14E126CREICHERT BLDRS               WEHLING             1116977067751161 L   DO*****
197     34N14E126CVUKODINIVICK G               WEHLING             0803971012503160 L   DO*****
197     34N14E126DBAKKOM T                     WEHLING             0527971012501161 L   DO*****
197     34N14E126DREICHERT R                   WEHLING             1127970009604161 L   DO*****
197     34N14E126DREICHERT R                   WEHLING             1127970009604161 L   DO*****
197     34N14E126DBAKKOM T                     WEHLING             0527971012501161 L   DO*****
197     34N14E127BCRAWFORD L                   HOLLEMAN            0315978071746160 L   DO*****
197     34N14E127BCRAWFORD L                   HOLLEMAN            0315978071746160 L   DO*****
1972956334N14E128AMIEDEMA C                    SHARPE              0527987131395160 L   DO*****
1972956334N14E128AMIEDEMA C                    SHARPE              0527987131395160 L   DO*****
197     34N14E13  SCHAEL V                     WEHLING             0000949      192 L   DO*****
197     34N14E13  BOSSETT F                    HOLLEMAN            0000967      165 L   DO*****
197     34N14E13  EHRICH H                     HOLLEMAN            0000967      193 L   DO*****
197     34N14E13  SPONLSTIA J                  HOLLEMAN            0000961      160 L   DO*****
197     34N14E13  KANIK E                      HOLLEMAN            0000968      182 L   DO*****
197     34N14E13  REIDENGA R                   HOLLEMAN            0000967      189 L   DO*****
197     34N14E13  FRACHEY R                    HOLLEMAN            0000968      162 L   DO*****
197     34N14E13  PIECZYNSKI J                 SHARPE              1015977066413160 L   DO*****
197     34N14E13  FERGUSON D                   SHARPE              1007977067958140 L   DO*****
197     34N14E13  ERICKSON R                   SHARPE              1003977067957140 L   DO*****
197     34N14E13  BOOT N                       SHARPE              0906977065842140 L   DO*****
197     34N14E13  COMAN P                      STINNETT            0722968005098180 L   DO*****
197     34N14E13  WALTERS G                    HOLLEMAN            0725969007661167 L   DO*****
1973000234N14E13  URBANCZYK M                  SHARPE              1002987135901160 L   DO*****
197     34N14E13  LESTER C                     SHARPE              0830974031908160 L   DO*****
197     34N14E13  THRUSH B                     SHARPE              0826974031341160 L   DO*****
1972904734N14E13  VICTOR E                     SHARPE              0910986125940180 L   DO*****
1972904634N14E13  OCONNOR M                    SHARPE              0916986125941160 L   DO*****
1973005134N14E13  RAPKA B                      SHARPE              1205987136448180 L   DO*****
197     34N14E13  JAMES E                      FOYLE               1018971014583135 L   DO*****
197     34N14E13  TAB CONST                    SHARPE              0918973025084180 L   DO*****
197     34N14E13  KARSTAN D                    SHARPE              0510977057443160 L   DO*****
197     34N14E13  CANTELE T                    HOLLEMAN            0606973020936157 L   DO*****
197     34N14E13  LENCKI P                     HOLLEMAN            0722974029019190 L   DO*****
197     34N14E13  TORMEY J                     HOLLEMAN            1119974031641165 L   DO*****
197     34N14E13  POCYGA D                     HOLLEMAN            0502975036767185 L   DO*****
197     34N14E13  KASCHER J                    HOLLEMAN            0628975037168160 L   DO*****
197     34N14E13  CHAPMAN BLDRS                KNIERIM             0519976047352150 L   DO*****
197     34N14E13  CUBBEN T                     WEHLING             0600976050107141 L   DO*****
197     34N14E13  BISHOP D                     HOLLEMAN            0214976044168160 L   DO*****
197     34N14E13  BLDRS                        KNIERIM             0120977055084160 L   DO*****
197     34N14E13  DICARLO V                    KNIERIM             0622978074573120 L   DO*****
197     34N14E13  BIGGERSTAFF B                SHARPE              0714985118908180 L   DO*****
197     34N14E13  BAAKER J                     WEHLING             0000975          L   DO*****
197     34N14E131HSVSNDWSKI J                  HOLLEMAN            0525973021858180 L   DO*****
197     34N14E132CHUNTER L                     KNIERIM             0707972017353168 L   DO*****
197     34N14E132FANDRICEK J                   KNIERIM             0801974031276170 L   DO*****
1972977634N14E132FMARCHESE M                   SHARPE              0909987133387180 L   DO*****
197     34N14E132GBOVA J                       WEHLING             0202981098313240 L   DO*****
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1	2	3	4	5	6	7	8
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890							
197	34N14E1C33MATOKAR T	KNIERIM	1102976053963200	L	DO******		
197	34N14E133DMARCONI T	WEHLING	1105970010603228	L	DO******		
197	34N14E133FCHAPMAN BLD	KNIERIM	0721970010117170	L	DO******		
197	34N14E133FANDRUSEK J	KNIERIM	0726974031456170	L	DO******		
197	34N14E133HSOBIE B	HOLLEMAN	0825978008875158	L	DO******		
197	34N14E133HJOHNSON G	WEHLING	0428972016974178	L	DO******		
197	34N14E134CGOLDIE R	WEHLING	1004968004970162	L	DO******		
197	34N14E134DTADROWSKI B	WEHLING	0302971011706142	L	DO******		
197	34N14E134FBAKKER J	WEHLING	1121969008685191	L	DO******		
197	34N14E134GDILLEMBECK D	HOLLEMAN	1023970010592160	L	DO******		
197	34N14E134HPOWDRS T	FOYLE	1107971015304180	L	DO******		
197	34N14E135HRAGLAND O	WEHLING	1209971015718163	L	DO******		
197	34N14E136CHAPMAN BLDRS	KNIERIM	0730970010118180	L	DO******		
197	34N14E137CJONES R	KNIERIM	0701976048602180	L	DO******		
197	34N14E137DJONES R	KNIERIM	0915975040461180	L	DO******		
197	34N14E13GGBENCH J	WILL DUPAGE CO	0226979083645150	L	DO******		
197	34N14E14 SHUETBLE	TATTERNOLL	0000949 128	L	DO******		
197	34N14E14 MOST M	WEHLING	0000974	L	DO******		
197	34N14E144HCLELAND G	WEHLING	0117969006660130	L	DO******		
19728697	34N14E146EHAMILTON A	WEHLING	1029861219061 60	L	DO******		
197	34N14E15 WITLOCK	KRAMER	0000933 162	L	DO******		
197	34N14E15 MCCOY	KRAMER	0000933 181	L	DO******		
197	34N14E153HDILLON G	WEHLING	0613975038445101	L	DO******		
19728367	34N14E154AWRIGHT	SHARPE	0509985117494160	L	DO******		
197	34N14E15 FAITH PROCESSING	WILL DUPAGE CO	1025X74854447145	L	CM******	Commercial	
197	34N14E16 SALLER F	BAHLMAN	0200907 100	L	DO******		
197	34N14E16 MARLETT V	CRETE	0000949 129	L	DO******		
197	34N14E16 PLAGGE A	WEHLING	0404967002213141	L	DO******		
197	34N14E16 PROGRESS ENGINEERING	WEHLING	0628967002744300	L	CM******		
197	34N14E16 TOSI J LOT 3	KNIERIM	0927971014096150	L	DO******		
197	34N14E16 WEHOLE R LOT 17	HOLLEMAN	0402975036427175	L	DO******		
197	34N14E16 TRIEBOLD L	WEHLING	0000976	L	DO******		
197	34N14E16 EDWARDS R LOT 21	HOLLEMAN	1019982105114160	L	DO******		
197	34N14E163EJOHNSON C	SHARPE	0620982103634180	L	DO******		
197	34N14E166FBLANE D	WEHLING	1116984115716110	L	DO******		
197	34N14E167BREMI J	HOLLEMAN	1020976053158160	L	DO******		
197	34N14E168BCRETE LAWN AND LEISURE	WEHLING	0311976045142161	L	DO******		
197	34N14E168DSTEIBER F	SHARPE	0928972104831150	L	DO******		
197	34N14E17 GOCAL E	WEHLING	0000986	L	DO******		
197	34N14E17 SCHUMANN H	WEHLING	0000947 191	L	DO******		
19700538	34N14E17 KELLEY J	WEHLING	0100959 190	L	DO******		
197	34N14E17 GRANT D	HOLLEMAN	0000967 185	L	DO******		
197	34N14E17 KELLEY J	WEHLING	0100959 190	L	DO******		
197	34N14E171ECLARK A	SHARPE	1027973026257175	L	DO******		
197	34N14E174CPHEBUS W	WEHLING	1206971015597181	L	DO******		
197	34N14E174EHAHN K	HOLLEMAN	1020971012563166	L	DO******		
197	34N14E178HSCANLAN E	WEHLING	0127981098030200	L	DO******		
197	34N14E18 WACKE J	BAHLMAN	0600904 72	L	DO******		
19729070	34N14E182HPARKE J	WEHLING	0828986126156180	L	DO******		
197	34N14E188EDEER CREEK GOLF COURSE	WEHLING	0515987131630400	L	DO******		
197	34N14E20 BENNHOLTI H	WEHLING	0000949 210	L	DO******		
197	34N14E20 PRALLE W	WEHLING	0000949 139	L	DO******		
197	34N14E20 FROZEN FOOD LOCKER PLANT	WEITING	0000947 44	L	CM******		
197	34N14E203GSEAWAY BROADCASTING	HOLLEMAN	0110972015636200	L	DO******		
197	34N14E203GFAITH BAP CHURCH	KNIERIM	1023974033393180	L	DO******		
197	34N14E204EBALMORAL ELE SCHOOL	WEHLING	0000960 202	LC	SO******		

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1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E216GVANDER AA BROS BUS LINES      WEHLING             100597605245520I L   DO*****
197     34N14E21  RYAN L                        WEHLING             0000949       152 L   DO*****
197     34N14E21  LINCOLN FIELDS RACING ASSOC   LAYNE WESTERN       0000953       379 CL  CM*****
197     34N14E212DKELLY E                       SHARPE              0729983108274160 L   DO*****
197     34N14E217FPHILLIPI D                    STINNETT            102296009663880  L   DO*****
1972942834N14E218ECONNER D                      SHARPE              0412987130102180 L   DO*****
197     34N14E218EBARTKUS J                     WEHLING             0727977062540191 L   DO*****
197     34N14E218FCHAPMAN BLDRS                 KNIERIM             0910976051201180 L   DO*****
197     34N14E218HNATALE J                      HOLLEMAN            0701976048927175 L   DO*****
197     34N14E22  MIDWENT UTILITIES             HOLLEMAN            0000968       152 L   DO*****
1972953834N14E228GGALATTE A                     SHARPE              0502987131030200 L   DO*****
197     34N14E23  RINCKER L                     WEHLING             0000948       149 L   DO*****
197     34N14E23                                HEMMINGWAY          0000934       136 L   DO*****
197     34N14E23  SODERLAND E                   HOLLEMAN            0630969007660173 L   DO*****
197     34N14E23  PODBISLSKI K                  HOLLEMAN            0820971013912185 L   DO*****
197     34N14E23  MCCORMICK P                   HOLLEMAN            0501974028487190 L   DO*****
197     34N14E23  FARACCARO T                   WILL DUPAGE CO      0121975034452175 L   DO*****
197     34N14E23  KIRAN L                       SHARPE              1201976052960180 L   DO*****
197     34N14E23  KIRAN A                       SHARPE              1120976052959180 L   DO*****
197     34N14E23  KIRAN L                       SHARPE              0906977065309220 L   DO*****
197     34N14E23  KALA R                        SHARPE              0722977061238180 L   DO*****
197     34N14E23  DEWITT N                      SHARPE              0429977059779220 L   DO*****
197     34N14E23  LOVERDE D                     WEHLING             0820976046771160 L   DO*****
197     34N14E23  DESER J                       SHARPE              0724974031397180 L   DO*****
197     34N14E23  JAEGER C                      SHARPE              0809976047346180 L   DO*****
197     34N14E23  ERICKSON R                    SHARPE              1201976047347175 L   DO*****
197     34N14E23  HASSEY G                      SHARPE              1119976035288200·L   DO*****
1972857534N14E23  KIRAN L                       SHARPE              1230985120404220 L   DO*****
197     34N14E235ABLACK R                       WEHLING             1121972021076161 L   DO*****
197     34N14E236BMADURA A                      KNIERIM             0517974028477190 L   DO*****
197     34N14E237BCHAPMAN BLDRS                 KNIERIM             0807971013807240 L   DO*****
197     34N14E237ELINDBLAD CONST                LOCKPORT            1221972020682155 L   DO*****
1972853734N14E238DFREUDENBERG G                 KNIERIM            *0917985119964140 L   DO*****
197     34N14E24  SUN VALLEY SPORTS CLUB        WEHLING             0000960       203 L   CM*****
197     34N14E24  RADEMACHEN A                  HOLLEMAN            0000968       166 L   DO*****
197     34N14E24  WALLACE R                     STINNETT            1205969006488200 L   DO*****
197     34N14E24  PEDERSEN A                    HOLLEMAN            0825971014088195 L   DO*****
197     34N14E24  SAPPER D                      WEHLING             0105972015810169 L   DO*****
197     34N14E24  MATELA L                      WEHLING             1223971015598161 L   DO*****
197     34N14E24  OLEJNICAZK T                  HOLLEMAN            0922973024174185 L   DO*****
197     34N14E24  DYNHAUG R                     HOLLEMAN            1011975041208195 L   DO*****
197     34N14E24  BADER F                       SHARPE              0916974031041180 L   DO*****
197     34N14E24  MORTIN C                      SHARPE              0226974026060180 L   DO*****
197     34N14E246DLAATSCH M                     WEHLING             0526970009534161 L   DO*****
197     34N14E249CDRESPLING M                   HOLLEMAN            0525980093981165 L   DO*****
197     34N14E27  SCHLOSS P                     HOLLEMAN            0000966       182 L   DO*****
197     34N14E27  ROOT BROS MGF CO              WEHLING             0516967002459181 L   DO*****
197     34N14E27  MARTIN W                      HOLLEMAN            0000967       173 L   DO*****
197     34N14E271GWITHESS P                     HOLLEMAN            1020972019303180 L   DO*****
197     34N14E272FBIEDERMAN D                   WEHLING             1024972020507141 L   DO*****
197     34N14E273GSTEVENS G                     WEHLING             1110970011021141 L   DO*****
197     34N14E273HFORNEY B                      WEHLING             1106974034184141 L   DO*****
197     34N14E274ABOY SCOUTS OF AMERICA                             1001965       500 CI  CM*****
197     34N14E276BBALMORAL JOCKEY CLUB          LAYNE WESTERN       0000968       379 L   DO*****
197     34N14E276FWOODS C                       STINNETT            0511979084939116 L   DO*****
197     34N14E278BPLUM CREEK WASTEWATER TREATMENWEHLING             0606979075849250 L   CM*****
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         1         2         3         4         5         6         7         8         9
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
197     34N14E28  CHICAGO MILWAUKEE ST PAUL     MILLER              0700945      350 L   DM*****
197     34N14E28  LINCOLN FIELDS RACE TRACK     CATER               0000944      1737L . DM*****
197     34N14E28  LINCOLN FIELDS RACE TRACK     CATER               0000927      1730L   DM*****
1972980034N14E28  NAUGHTON REAL ESTATE          WEHLING             07248871335721S0 L   DD*****
1972979934N14E28  NAUGHTON CHAINES C            WEHLING             110998713359315O L   DD*****
197     34N14E28  LINCOLN FIELDS RACETRACT      CATER               0000927      1757LO  DM*****
1972980134N14E282BPARKER A                      WEHLING             0923987133374140 L   DD*****
197     34N14E283AFAIRLANDS CORP GOLF CS        WEHLING             0311969006803450 LOI DM*****
197     34N14E284DBALMORAL WOODS GOLF           WEHLING             0722983108110330 L   DM*****
197     34N14E284DBALMORAL WOODS GOLF           WEHLING             0808983108376126 L   DM*****
197     34N14E288GBALMORE JOCKEY CLUB           LAYNE WESTERN       0000968          L   DM*****
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White Copy — Ill. Dept. Public Health
Yellow Copy — Well Contractor
Blue Copy — Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

7/67

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 152 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam._____in. Depth _____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes X No_____
4. Date well completed June 11, 1968
5. Permanent Pump Installed? Yes_____ No_____
   Manufacturer _____ Type_____
   Capacity _____gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes_____ No_____
7. Pitless Adaptor Installed? Yes_____ No_____
8. Well Disinfected? Yes X No_____
9. Water Sample Submitted? Yes_____ No_____

REMARKS:

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. 5083 Year 1968
11. Property owner H.C. Neale Well No. _____
    Address 1120 Montgomery Drive, Crete, Illinois
    Driller E. C. Wehling License No. 22-56
12. Water from _____ (Formation)
    at depth _____ to _____ ft.
13. County Will
    Sec. 10 S
    Twp. 34N
    Rng. 10E
    Elev. _____
14. Screen: Diam._____in.
    Length:_____ft. Slot _____
    SE SE NW
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv. seamless	0	94

SHOW LOCATION IN SECTION PLAT

16. Size Hole below casing: 4-7/8 in.
17. Static level 40 ft. below casing top which is _____ ft. above ground level. Pumping level 40 ft. when pumping at 20 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	1	1
Clay	39	40
Muddy Sand	10	50
Sand	25	75
Clay	15	90
Lime	62	152
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED E. C. Wehling, Pres. DATE June 18, 1968

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, ST. OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

1/67

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 6 in. Depth 205 ft.
   Curb material _____. Buried Slab: Yes____ No____
   b. Driven _____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes _____ No _____
4. Date well completed 8-9-68
5. Permanent Pump Installed? Yes _____ No _____
   Manufacturer _____ Type _____
   Capacity _____ gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes X No _____
7. Pitless Adaptor Installed? Yes _____ No _____
8. Well Disinfected? Yes X No _____
9. Water Sample Submitted? Yes _____ No X

REMARKS:

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. 5355 Year 1968
11. Property owner Montgomery Improvement Well No. 1
    Address Montgomery Drive, Crete, Illinois
    Driller E. C. Wehling License No. 92-56
12. Water from _____ (Formation)
    at depth ____ to ____ ft.
13. County Will
    Sec. 10
    Twp. 34N
    Rng. 14E
    Elev. _____
14. Screen: Diam. _____ in.
    Length: ____ ft. Slot _____
    SW SE NW
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	Galv. Seamless	0	94

SHOW LOCATION IN SECTION PLAT

SW SE NW

16. Size Hole below casing: 5-7/8 in.
17. Static level 39 ft. below casing top which is _____ ft. above ground level. Pumping level 39 ft. when pumping at 60 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	35	35
Sand	35	70
Clay	31	91
Lime	114	205
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED E. C. Wehling, President DATE August 19, 1968

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 97 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes X No_____
4. Date well completed Nov. 10, 1972
5. Permanent Pump Installed? Yes X No_____
   Manufacturer Red Jacket Type Submersible
   Capacity _____gpm. Depth of setting 46 ft.
6. Well Top Sealed? Yes X No_____
7. Pitless Adaptor Installed? Yes X No_____
8. Well Disinfected? Yes X No_____
9. Water Sample Submitted? Yes_____ No X

REMARKS:

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner James Sasaki Well No. 1
    Address Crete, Illinois 60417
    Driller Wehling Well Works, Inc License No. 92-56
11. Permit No. 19579 Date 8-18-72
12. Water from _____ (Formation)
    at depth _____ to _____ft.
13. County Will
    Sec. 10 .6e
    Twp. 34N
    Rge. 14E
    Elev. _____
14. Screen: Diam. _____in.
    Length: _____ft. Slot _____
    175'S 25'E NW SW NE SW
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv. seamless	0	85

SHOW LOCATION IN SECTION PLAT
175'S 25'E
NW/c SW NE SW

16. Size Hole below casing: 4-7/8 in.
17. Static level 18 ft. below casing top which is _____ ft. above ground level. Pumping level 18 ft. when pumping at 15 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	10	10
Sand	40	50
Sand & gravel	17	67
Lime	30	97

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Wehling Well Works, Inc. DATE 11-21-72

White Copy – Ill. Dept of Pu.. Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION RECORDED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 161 ft.
   Curb material____. Buried Slab: Yes____ No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 2/7/78
5. Permanent Pump Installed? Yes____ Date____ No X
   Manufacturer____ Type____ Location____
   Capacity____gpm. Depth of Setting____Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes____ No____
   Manufacturer____ Model Number____
   How attached to casing?____
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes____ No____
10. Pressure Tank Size____gal. Type____
    Location____
11. Water Sample Submitted? Yes____ No____

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Ephgrave Well No.____
    Address 1206 Glouchester, Crete, IL
    Driller W. E. Wehling License No. 102-2
11. Permit No. 70850 Date 1/19/78
12. Water from____ Formation 13. County Will
    at depth____ to____ft. Sec. 10
14. Screen: Diam.____in. Twp. 34N
    Length:____ft. Slot____ Rge. 14E
    lot#27, block#5, part #2 of Unit#5 Elev.____
15. Casing and Liner Pipe of Lincolnshire Estates

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv. seamless	+1	99

SHOW LOCATION IN SECTION PLAT
Lot 27, all 5, Part 2, Unit 5, Lincolnshire Est. Subd., SE ¼

16. Size Hole below casing: 4 7/8 in.
17. Static level 43 ft. below casing top which is____ft. above ground level. Pumping level 43 ft. when pumping at 20 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	15	15
Sand	35	50
Clay	5	55
Muddy Sand	~~30~~ 25	80
Clay	15	95
Lime	66	161

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

Wehling Well Works, Inc.
SIGNED R. H. Wehling by D.W. DATE 2/15/78

IDPH 4.065
1/74 – K 1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 135 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled x. Finished in Drift _____. In Rock x.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10+ Ft. — Seepage Tile Field 75+
   Cess Pool _____ — Sewer (non Cast iron) _____
   Privy _____ — Sewer (Cast iron) _____
   Septic Tank 50 + — Barnyard _____
   Leaching Pit _____ — Manure Pile _____
3. Well furnishes water for human consumption? Yes x No_____
4. Date well completed October 24, 1985
5. Permanent Pump Installed? Yes x Date Oct 25 No_____
   Manufacturer Red Jacket Type Sub. Location in well
   Capacity 10 gpm. Depth of Setting 80' Ft.
6. Well Top Sealed? Yes_____ No_____ Type _____
7. Pitless Adapter Installed? Yes x No_____
   Manufacturer Baker Model Number Snappy
   How attached to casing? inserted
8. Well Disinfected? Yes x No_____
9. Pump and Equipment Disinfected? Yes x No_____
10. Pressure Tank Size 82 gal. Type Captive air
    Location in house
11. Water Sample Submitted? Yes_____ No x

REMARKS:

Co. # 28615

IDPH 4.065
1/74 – KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Charles Perez Well No. _____
    Address 137 E. Exchange St., Crete, Ill.
    Driller Webling Well Works License No. 102-2
11. Permit No. 120969 Date Oct. 22, 1985
12. Water from _____ (Formation) 13. County Will
    at depth _____ to _____ ft.
    14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
    Sec. 10. 7g
    Twp. 34N
    Rge. 14E
    Elev. _____

X			

500'N 150'E NWC SE NW NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	Galv. steel	+1	93

SHOW LOCATION IN SECTION PLAT
500'N 150'E
SW¼ SE NW NW

16. Size Hole below casing: 4-7/8 in.
17. Static level _____ ft. below casing top which is _____ ft. above ground level. Pumping level _____ ft. when pumping at _____ gpm for _____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Brown Clay	15	15
Clay & Gravel	53	68
Gravel with clay	15	83
Gray Clay	10	93
Lime	42	135

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED W. E. Webling DATE Oct. 29, 1985

White & k Copies:
Will County Health Dept
Yellow Copy: Well Contractor

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS

Your application must be submitted to the appropriate office depending on which township the well is to be located. See listing below.

Will County Health Dept.
Environmental Health
501 Ella Avenue
Joliet, IL 60433
(815) 727-8840

Townships
Channahon
Custer
Florence
Jackson
Joliet
Manhattan
New Lenox
Reed
Troy
Wesley
Wilmington
Wilton

Will County Health Dept.
Environmental Health
342 N. Independence
Romeoville, IL 60441
(815) 886-1550
(312) 739-7971

Townships
DuPage
Homer
Lockport
Plainfield
Wheatland

Will County Health Dept.
Environmental Health
800 University Park
University Park, IL 60466
(815) 727-8803
(312) 534-0800

Townships
Crete
Frankfort
Green Garden
Monee
Peotone
Washington
Will

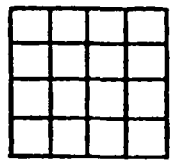
1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
      Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock____

d. Grout:	(KIND)	FROM (Ft.)	TO (Ft.)
	BENTONITE	0	95

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 4-16-90
4. Permanent pump installed? Yes X Date 4-18-90 No___
   Manufacturer RED JACKET Type_____
   Location WELL
   Capacity 15 gpm. Depth of setting 105 ft.
5. Well top sealed? Yes X No___ Type_____
6. Pitless adapter installed? Yes X No___
   Manufacturer MARTINSON Model No._____
   How attached to casing? MECHANICAL
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller FRANK SHARPE License No. 92-004773
10. Well Site Address 10 GREENBRIAR, CRETE, IL
11. Property Owner MIDAR DEVELOPMENT Well No._____
12. Permit No. 97-90-0029 E Date Issued 1-16-90
13. A. Tax # 15-03-301-006
    B. Location: 1972990 Sec. 10 Twp. 35N Rge. 14E



Show location in section plat

No Legal
Lot #10
Greenbriar

14. Water from _____ at depth_____ft to_____ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5	[illegible]	0	96
	SDR 26 H200 PVC		

16. Screen: Diam.____in, Length____in, Slot Size____
17. Size hole below casing 4¾ in. 18. Ground Elev._____ ft msl.
19. Static level____ft below casing top which is ____ft. above ground level. Pumping level 25 ft, pumping gpm for 4 hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Clay	0	65
Gravel	65	95
Limestone	95	180

Continue on separate sheet if necessary.

Signed Frank Sharpe Date 4-20-90.

White Copy – Ill. Dept. o[illegible]lic Health
Yellow Copy – [illegible]ell Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO [illegible]LLERS

FILL IN ALL PERTINENT INFORMATION REQU[illegible]ED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, [illegible]ATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

1/67

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 130 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled x. Finished in Drift _____. In Rock x.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes x No_____
4. Date well completed Jan. 17, 1969
5. Permanent Pump Installed? Yes_____ No x
   Manufacturer _____ Type _____
   Capacity _____gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes x No_____
7. Pitless Adaptor Installed? Yes_____ No_____
8. Well Disinfected? Yes x No _____
9. Water Sample Submitted? Yes_____ No x

REMARKS:

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. 6660 Year 1968
11. Property owner Mr. G. Cleland Well No. 1
    Address 1443 Homan Ave., Midlothian, Illinois
    Driller E. C. Wehling License No. 92-56
12. Water from _____ (Formation)
    at depth _____ to _____ ft.
13. County Will
    Sec. 14. SW
    Twp. 35N
    Rng. 14E
    Elev. _____
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____
    100'S & 280'E NW NW NW NE
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv. seamless	0	66

SHOW LOCATION IN SECTION PLAT

100'S 280'E of NW/c NW NW NE

16. Size Hole below casing: 4-7/8 in.
17. Static level 28 ft. below casing top which is 4 ft. above ground level. Pumping level 28 ft. when pumping at 18 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	[illegible]	29
Sand	9	33
Gravel	3	41
Lime	89	130
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED E. C. Wehling, Pres. DATE Jan. 31, 1969

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5" in. Depth 160 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10+ Ft. — Seepage Tile Field 75+
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 50+ — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed Jan 2, 1986
5. Permanent Pump Installed? Yes X Date 1-3-86 No ____
   Manufacturer existing Type sub. Location in well
   Capacity ____ gpm. Depth of Setting 126' Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Baker Model Number Snappy
   How attached to casing? inserted
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size ____ gal. Type existing
    Location ____
11. Water Sample Submitted? Yes ____ No X

REMARKS:

Co. # 28697

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Allen Hamilton Well No. ____
    Address 800 Clark Ave., Yuma City, Calif
    Driller W. E. WEhling License No. 102-2
11. Permit No. 121906 Date Dec. 27, 1986
12. Water from ____ (Formation)
    at depth ____ to ____ ft.
13. County Will
    Sec. 14.6e
    Twp. 34N
    Rge. 13E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    90'N 520'E SWc SE NW
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galvanized	+1	125
	4-7/8		

SHOW LOCATION IN SECTION PLAT
90'N 520'E
Swc SE NW

16. Size Hole below casing: 4-7/8 in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	17	17
Clay & Gravel	85	102
Sticky clay	15	117
Clay & Gravel	8	125
Gray lime	7	132
Brown lime	28	160

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Wendell C Wehling DATE 1-10-86

IDPH 4.065
1/74 – KNB-1

White & Pink Copies:
Ill. Dept. of Public Health
Yellow Copy: Well Contractor
Golden Copy: Well Owner

RECEIVED
APR 03 1989
DIVISION OF ENVIRONMENTAL HEALTH

Well Construction Report

THIS FORM MUST BE COMPLETED WITHIN 30 DAYS OF WELL COMPLETION AND SENT TO
THE ILLINOIS DEPARTMENT OF PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
525 WEST JEFFERSON STREET
SPRINGFIELD, ILLINOIS 62761

1. Type of Well
   a. Bored____ Hole Diam.____in. Depth____ft
   Buried Slab: Yes___ No___
   b. Driven____ Drive Pipe Diam.____in. Depth____ft
   c. Drilled X Finished in Drift____ In Rock____
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Well furnishes water for human consumption? Yes X No___
3. Date well drilled 2-14-89
4. Permanent pump installed? Yes X Date 3-17-89 No___
   Manufacturer RJ Type sub
   Location well
   Capacity 12 gpm. Depth of setting 125 ft.
5. Well top sealed? Yes X No___ Type____
6. Pitless adapter installed? Yes X No___
   Manufacturer Martinson Model No.____
   How attached to casing? mechanical
7. Well disinfected? Yes X No___
8. Pump and equipment disinfected Yes X No___

IMPORTANT NOTICE

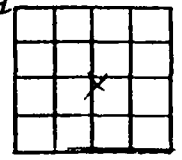
This State Agency is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under Public Act 85-0863. Disclosiure of this information is mandatory. This form has been approved by the Forms Management Center.

PRESS FIRMLY WITH BLACK PEN OR TYPE
Do Not Use Felt Pen

IL482-0126

GEOLOGICAL AND WATER SURVEYS WELL RECORD

9. Driller Frank Sharpe License No. 102001773
10. Well Site Address RR1-Box 192 Mokee IL 60499
11. Property Owner MARIAN MARZYNSKI Well No.____
12. Permit No. 009033 Date Issued 1-27-89
13. Location: County Will
    Sec. 14 1/4
    Twp. 34N
    Rge. 13E



Show location in section plat
NW NW SE

14. Water from limestone at depth 138 ft to 180 ft

15. Casing and Liner Pipe

Diam.(in)	Kind and Weight	From (ft)	To (ft)
5"	SDR 21 PVC	0	138

16. Screen: Diam.___in, Length___in, Slot Size___
17. Size hole below casing 9 3/4 in. 18. Ground Elev.____ ft msl.
19. Static level___ft below casing top which is 1 ft. above ground level. Pumping level ___ft, pumping gpm for ___ hours.

20. Earth Materials Passed Through	Depth of Top	Depth of Bottom
Clay	0	60
Sand	60	90
Clay	90	138
limestone	138	180

Continue on separate sheet if necessary.

Signed Frank Sharpe Date 3-29-89

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 101 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 75
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank 50 Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes X No ____
4. Date well completed 6-13-75
5. Permanent Pump Installed? Yes X No ____
   Manufacturer Red Jacket Type Submersible
   Capacity ____ gpm. Depth of setting 47'3" ft.
6. Well Top Sealed? Yes ____ No ____
7. Pitless Adaptor Installed? Yes X No ____ 5" Bard Monitor attached to casing by compression gasket
8. Well Disinfected? Yes X No ____
9. Water Sample Submitted? Yes ____ No X

REMARKS:
82 Gal. Well-X-Trol pressure tank

IDPH 4.065
10-72
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Glen Dillon Well No. ____
    Address Box 11A E. Exchange St., Crete, Illinois
    Driller Wehling Well Works License No. 102-2
11. Permit No. 38145 Date 6-11-75
12. Water from ____ (Formation) 13. County Will
    at depth ____ to ____ ft. Sec. 15, 34
    14. Screen: Diam. 5 in. Twp. 34N
    Length: ____ ft. Slot ____ Rge. 14E
    400'S 30'W NE NE NW NE Elev. ____
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galv seamless	0	43

SHOW LOCATION IN SECTION PLAT
400'S 30'W NE/c NE NW NE

16. Size Hole below casing: 5 in.
17. Static level 10 ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at 30 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
clay	0	10
muddy sand	10	15
sand	15	40
lime	40	101

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Wehling Well Works, Inc. DATE 7-31-75
Wendell E. Wehling Pres

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

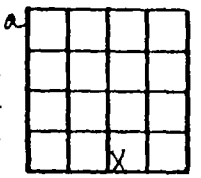
2. Distance to Nearest:
   Building 30 Ft. Seepage Tile Field +25
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank +50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 5-9-85
5. Permanent Pump Installed? Yes X Date 5-9 No____
   Manufacturer Red Jacket Type Sub Location Well
   Capacity 12 gpm. Depth of Setting 60 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Mastervon Model Number____
   How attached to casing? Mechanical
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 40 gal. Type C-M
    Location Loft
11. Water Sample Submitted? Yes____ No X

REMARKS:

County #28367

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Joseph Wright Well No.____
    Address 1266 Mackinaw Ave., Calumet City, IL
    Driller Frank Sharpe License No. 102-177
11. Permit No. 112494 Date 4/26/85
12. Water from limestone Formation 13. County Will
    at depth 68 to 160 ft. Sec. 15 4a
    14. Screen: Diam.____in. Twp. 34N
    Length:____ft. Slot____ Rge. 14E
    Elev.____



SHOW LOCATION IN SECTION PLAT
120'N 350'E
SW¼ SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	SDR 21	0	68

16. Size Hole below casing:____in.
17. Static level____ft. below casing top which is____ft. above ground level. Pumping level____ft. when pumping at____gpm for____hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	12	12
Sand	48	60
Gravel	8	68
Limestone	92	160

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Frank Sharpe DATE 9-25-85

IDPH 4.065
1/74 – KNP

White Copy - Ill. Dept. Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

1/67

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 141 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven 1. Drive Pipe Diam. _____in. Depth _____ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes X No_____
4. Date well completed April 4, 1967
5. Permanent Pump Installed? Yes_____ No x
   Manufacturer _____ Type _____
   Capacity _____gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes x No _____
7. Pitless Adaptor Installed? Yes_____ No_____
8. Well Disinfected? Yes x No _____
9. Water Sample Submitted? Yes_____ No x

REMARKS:

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. 2213 Year 1967
11. Property owner Adelia Plagge Well No. 1
    Address 1581 Austin Ave., Crete, Ill.
    Driller Wehling Well Works, Ind. License No. 92-56
12. Water from _____ (Formation)
    at depth ____ to ____ ft.
13. County Will
    Sec. 16.3a
    Twp. 34N
    Rng. 13E
    Elev. _____
14. Screen: Diam. _____in.
    Length: _____ft. Slot _____
    $SE\frac{1}{4}$ $SW\frac{1}{4}$ $SE\frac{1}{4}$
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galvanized	0	76

SHOW LOCATION IN SECTION PLAT

16. Size Hole below casing: 4-7/8 in.
17. Static level 34 ft. below casing top which is _____ ft. above ground level. Pumping level 42 ft. when pumping at 15 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	26	26
Sand	46	72
Lime	69	141
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED H. E. Kelley DATE 4-10-67

White Co. – Ill. Dep – Public Health
Yellow C... – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 61 STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

1/67

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 8 in. Depth 300 ft.
   Curb material _____. Buried Slab: Yes_____ No_____
   b. Driven _____. Drive Pipe Diam. _____ in. Depth _____ ft.
   c. Drilled X. Finished in Drift _____. In Rock X.
   Tubular _____. Gravel Packed _____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building _____ Ft. Seepage Tile Field _____
   Cess Pool _____ Sewer (non Cast iron) _____
   Privy _____ Sewer (Cast iron) _____
   Septic Tank _____ Barnyard _____
   Leaching Pit _____ Manure Pile _____
3. Is water from this well to be used for human consumption?
   Yes x No _____
4. Date well completed June 28, 1967
5. Permanent Pump Installed? Yes_____ No x
   Manufacturer _____ Type _____
   Capacity _____ gpm. Depth of setting _____ ft.
6. Well Top Sealed? Yes_____ No _____
7. Pitless Adaptor Installed? Yes_____ No_____
8. Well Disinfected? Yes x No _____
9. Water Sample Submitted? Yes_____ No x

REMARKS:

GEOLOGICAL WATER SURVEYS WATER WELL RECORD

10. Dept. Mines and Minerals permit No. 2744 Year 1967
11. Property owner Progress Engineering Well No. 1
    Address Crete, Illinois
    Driller Wehling Well Works, Inc License No. 92-56
12. Water from _____ (Formation)
    at depth _____ to _____ ft.
13. County Will
    Sec. 16
    Twp. 34N
    Rng. 11E
    Elev. _____
14. Screen: Diam. _____ in.
    Length: _____ ft. Slot _____

SHOW LOCATION IN SECTION PLAT

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
8"	Black	0	78

16. Size Hole below casing: 7-7/8 in.
17. Static level 28 ft. below casing top which is _____ ft. above ground level. Pumping level 42 ft. when pumping at 50 gpm for 5 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Sand	68	68
Lime	5	73
Lime and Sand	8	81
Lime	219	300
(CONTINUE ON SEPARATE SHEET IF NECESSARY)		

SIGNED _____ DATE 6-30-67

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 150 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
Cuttings		

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes X No ____
4. Date well completed 8-27-71
5. Permanent Pump Installed? Yes X No ____
   Manufacturer Barnes Type Submer.
   Capacity ____ gpm. Depth of setting 84 ft.
6. Well Top Sealed? Yes X No ____
7. Pitless Adaptor Installed? Yes X No ____
8. Well Disinfected? Yes X No ____
9. Water Sample Submitted? Yes ____ No X

REMARKS:
Owner instructed

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Joseph Tosi Well No. ____
    Address Lot 3 Schools Trustee Subd. Crete
    Driller Paul Ericson License No. 92-518
11. Permit No. 14096 Date 8-23-71
12. Water from Limestone (Formation) 13. County Will
    at depth 20 to 150 ft.
    Sec. 16
14. Screen: Diam. ____ in. Twp. 34N
    Length: ____ ft. Slot ____ Rge. 14E
    Elev. ____
15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Galv. 15#	0	92

SHOW LOCATION IN SECTION PLAT

Lot 3 in Schools Trustee's Sub. NW

16. Size Hole below casing: 5 in.
17. Static level 20 ft. below casing top which is 1 ft. above ground level. Pumping level 84 ft. when pumping at 20 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Overburden	0	92
Rock formation	92	150

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Paul Ericson DATE 10-26-71

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFOR. ION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
None		

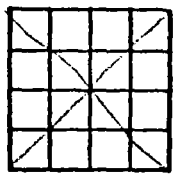
2. Distance to Nearest:
   Building 15 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 60 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Is water from this well to be used for human consumption?
   Yes X No ____
4. Date well completed April 2, 1975
5. Permanent Pump Installed? Yes X No ____
   Manufacturer Red Jacket Type Submd.
   Capacity 12 gpm. Depth of setting 75 ft.
6. Well Top Sealed? Yes X No ____
7. Pitless Adaptor Installed? Yes X No ____
8. Well Disinfected? Yes X No ____
9. Water Sample Submitted? Yes ____ No X

REMARKS:

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Ronald Wehrle Well No. 4
    Address 1563 East Gun, Crete, Illinois
    Driller H. Hellemann Jr License No. 102-77
11. Permit No. 36427 Date March 13, 1975
12. Water from Limestone Formation 13. County Will
    at depth 69 to 175 ft.
    Sec. 16
    Twp. 34N
    Rge. 14E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____



15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Standard Steel	0	69
	Galv. Casing 15		
	lbs. per ft.		

SHOW LOCATION IN SECTION PLAT
Lot 17 Block 6, Plat of Enterprise Subd. of Crete located in the SW corner

16. Size Hole below casing: 5 in.
17. Static level 38 ft. below casing top which is ____ ft. above ground level. Pumping level 46 ft. when pumping at 10 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Soil	1	1
Yellow Clay	21	22
Blue Clay	42	64
Gravel	5	69
Limestone	106	175

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED H. Hellemann Jr DATE April 2, 1975

White Copy – Ill. Dept. o[illegible]Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO [illegible]RILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, BUREAU OF ENVIRONMENTAL HEALTH, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62701. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

21.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam. 5 in. Depth 161 ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes X No____
4. Date well completed March 11, 1976
5. Permanent Pump Installed? Yes X No____
   Manufacturer Red Jacket Type Submersible
   Capacity____gpm. Depth of setting 68 ft.
6. Well Top Sealed? Yes X No____
7. Pitless Adaptor Installed? Yes X Baker – compression gasketed No____ + bolts
8. Well Disinfected? Yes X No____
9. Water Sample Submitted? Yes____ No X

REMARKS:
82 gal. pressure tank - Well-X-trol

IDPH 4.065
10-72
KNB-1

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Crete Lawn & Leisure Well No.____
    Address 1742 S. Main St. Crete, Illinois
    Driller Wendell E. Wehling License No. 102-2
11. Permit No. 45142 Date 3-5-76
12. Water from____ 13. County Will
    Formation
    at depth____ to____ft. Sec. 16.96
14. Screen: Diam.____in. Twp. 34N
    Length:____ft. Slot____ Rge. 14E
    100'S 365'W NE NW SW SW Elev.____
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	gav. seamless	0	77

SHOW LOCATION IN SECTION PLAT
100'S 365'W of N E/c NW SW SW

16. Size Hole below casing: 4-7/8 in.
17. Static level 30 ft. below casing top which is____ft. above ground level. Pumping level 46 ft. when pumping at 15 gpm for 3 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Black dirt	0	1
Clay	1	13
Sand	13	67
Lime	67	161

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Wehling, Wendell E. DATE March 24, 1976
FK

White Copy –
Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, ROOM 616, STATE OFFICE BUILDING, SPRINGFIELD, ILLINOIS, 62706. DO NOT DETACH GEOLOGICAL / WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled X. Finished in Drift____. In Rock X.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)
None		

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field 80
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank 70 Barnyard____
   Leaching Pit____ Manure Pile____
3. Is water from this well to be used for human consumption?
   Yes X No____
4. Date well completed Oct. 20, 1976
5. Permanent Pump Installed? Yes X No____
   Manufacturer Jacuzzi Type Submersible
   Capacity 12 gpm. Depth of setting 84 ft.
6. Well Top Sealed? Yes X No____
7. Pitless Adaptor Installed? Yes X No____
8. Well Disinfected? Yes X No____
9. Water Sample Submitted? Yes____ No X

REMARKS:

IDPH 4.065
10/68

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Renzi Well No. #6
    Address Dixie Highway, Crete, Ill.
    Driller H. Hellmund License No. 102-77
11. Permit No. 53158 Date Oct. 6, 1976
12. Water from Limestone Formation 13. County Will
    at depth 84 to 160 ft.
    Sec. 16 Twp. 34N Rge. 14E Elev.____
14. Screen: Diam.____in.
    Length:____ft. Slot____

SHOW LOCATION IN SECTION PLAT
NE SW SW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	Standard Steel	0	84
	Gate Casing, 15		
	lbs. per ft.		

16. Size Hole below casing: 5 in.
17. Static level 41 ft. below casing top which is 1 ft. above ground level. Pumping level 42 ft. when pumping at 15 gpm for 1 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Soil	1	1
Yellow Clay	15	16
Blue Clay	33	49
Sand	15	64
Blue Clay	16	80
Gravel	4	84
Limestone	76	160

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED H. Hellmund DATE Oct. 20, 197

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTION! .LERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. ____ in. Depth ____ ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 8 Ft.
   Cess Pool ____
   Privy ____
   Septic Tank 75'
   Leaching Pit ____
   Seepage Tile Field 475
   Sewer (non Cast iron) ____
   Sewer (Cast iron) ____
   Barnyard ____
   Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 6-20-82
5. Permanent Pump Installed? Yes X Date 6-20 No ____
   Manufacturer Red Jacket Type Sub Location Well
   Capacity 14 gpm. Depth of Setting 60 Ft.
6. Well Top Sealed? Yes X No ____ Type ____
7. Pitless Adapter Installed? Yes X No ____
   Manufacturer Maass Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size 42 gal. Type WX202
    Location Basement
11. Water Sample Submitted? Yes ____ No X

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Charles Johnson Well No. ____
    Address 1588 Fairfield Ave. Crete, Ill
    Driller Fred Sharpe License No. ____
11. Permit No. 10364 Date 5-28-82
12. Water from Limestone (Formation) 13. County Will
    at depth 51 to 180 ft.
14. Screen: Diam. ____ in. Length: ____ ft. Slot ____

Sec. 16.5 Twp. 34N Rge. 14E Elev. ____

SHOW LOCATION IN SECTION PLAT
200'N 35'W
SE¼ NW

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	SDR 21 # 200 PVC	0	51

16. Size Hole below casing: 4 3/4 in.
17. Static level 36 ft. below casing top which is 1 ft. above ground level. Pumping level 36 ft. when pumping at 15 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	10	10
Sand & gravel	41	51
Limestone	129	180

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Fred Sharpe DATE 2-7-83

IDPH 4.065
1/74 – KNB-1

White Copy — Ill. Dept. of Public Health
Yellow Copy — Well Contractor
Blue Copy — Well Owner

INSTRUCTIONS - **.LERS**

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 150 ft.
      Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled X. Finished in Drift ____. In Rock X.
      Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building ____ Ft. Seepage Tile Field ____
   Cess Pool ____ Sewer (non Cast iron) ____
   Privy ____ Sewer (Cast iron) ____
   Septic Tank ____ Barnyard ____
   Leaching Pit ____ Manure Pile ____
3. Well furnishes water for human consumption? Yes X No ____
4. Date well completed 9-22-82
5. Permanent Pump Installed? Yes X Date 9-28 No ____
   Manufacturer Baker Type Hand Location at well
   Capacity 10 gpm. Depth of Setting 54 Ft.
6. Well Top Sealed? Yes X No ____ Type Baker
7. Pitless Adapter Installed? Yes ____ No X
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes X No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No X

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Fred Steiber (Fred Steiber) Well No. ____
    Address [illegible]
    Driller Fred [illegible] License No. 102-192
11. Permit No. 104831 Date 9-16-82
12. Water from Limestone (Formation) 13. County Will
    at depth 68 to 150 ft. Sec. 16-8d
14. Screen: Diam. ____ in. Twp. 34N
    Length: ____ ft. Slot ____ Rge. 14E
    Elev. ____

SHOW LOCATION IN SECTION PLAT
120'S 75'E NW/c SW
Hand pump for cemetary

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	SDR 21 #200 PVC	0	68

16. Size Hole below casing: 4 3/4 in.
17. Static level 30 ft. below casing top which is 1 ft. above ground level. Pumping level 30 ft. when pumping at 20 gpm for 4 hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	19	19
Sand & gravel	31	50
Clay	8	58
Sand & gravel	10	68
Limestone	82	150

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Fred [illegible] DATE 2-7-83

IDPH 4.065
1/74 XNB-1

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO D' ERS

FILL IN ALL PERTINENT INFORMATION REQUE. D AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug ____. Bored ____. Hole Diam. 5 in. Depth 110 ft.
   Curb material ____. Buried Slab: Yes ____ No ____
   b. Driven ____. Drive Pipe Diam. ____ in. Depth ____ ft.
   c. Drilled XX. Finished in Drift ____. In Rock X.
   Tubular ____. Gravel Packed ____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. — Seepage Tile Field 75
   Cess Pool ____ — Sewer (non Cast iron) ____
   Privy ____ — Sewer (Cast iron) ____
   Septic Tank 50 — Barnyard ____
   Leaching Pit ____ — Manure Pile ____
3. Well furnishes water for human consumption? Yes XX No ____
4. Date well completed Nov. 16, 1984
5. Permanent Pump Installed? Yes ____ Date ____ No X
   Manufacturer ____ Type ____ Location ____
   Capacity ____ gpm. Depth of Setting ____ Ft.
6. Well Top Sealed? Yes ____ No ____ Type ____
7. Pitless Adapter Installed? Yes ____ No XX
   Manufacturer ____ Model Number ____
   How attached to casing? ____
8. Well Disinfected? Yes X No ____
9. Pump and Equipment Disinfected? Yes ____ No ____
10. Pressure Tank Size ____ gal. Type ____
    Location ____
11. Water Sample Submitted? Yes ____ No X

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Donald Slane Well No. 1
    Address 1562 Faithrone Road, Crete, Ill.
    Driller W. E. Wehling License No. 102-2
11. Permit No. 115716 Date 11-8-84
12. Water from ____ (Formation)
    at depth ____ to ____ ft.
13. County Will
    Sec. 16-6f
    Twp. 34N
    Rge. 14E
    Elev. ____
14. Screen: Diam. ____ in.
    Length: ____ ft. Slot ____
    150'N 80'W SEc NW SE NW
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5	galvanized	+1	64

SHOW LOCATION IN SECTION PLAT
150'N 80'W
SE/c NW SE NW

16. Size Hole below casing: 4-7/8 in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	36	36
Clay & Gravel	12	48
Gravel	9	57
Gravel & Clay	6	63
Lime	47	110

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Kendall B Kelley DATE Nov. 26, 1984

IDPH 4.065
1/74 – KNB-1

LOG OF WATER WELL

Property owner Midwest Utilities Well No. 106

Drilled by H. Hellerman Year 1968

Formations passed through	Thickness	Depth of Bottom
Soil	1	1
Yellow Clay	16	17
Blue Clay	51	68
Sand & Gravel	3	71
Limestone	81	152

[Continue on back if necessary]

Finished in limestone at 71 to 152 ft.

Cased with 5 inch galv casing from 0 to 71 ft.

and ____ inch ____ from ____ to ____ ft.

Size hole below casing 5 inch. Static level from surf. 1 ft.

Tested capacity 15 gal. per min. Temperature ____ °F.

Water lowered to 2 ft. ____ in. in 1 hrs. ____ min.

Length of test 1 hrs. ____ min. Screen ____

Slot ____ Diam. ____ Length ____ Bottom set at ____ ft.

[Show location in Section Plat]

Township name ____ Elev. ____

Description of location ____

Sec. 22

Twp. 34N

Rge. 14E

Signed H. Hellerman County Will

Copy for Illinois State Water Survey Index:

White Copy – Ill. Dept. of Public Health
Yellow Copy – Well Contractor
Blue Copy – Well Owner

INSTRUCTIONS TO DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well
   a. Dug____. Bored____. Hole Diam.____in. Depth____ft.
   Curb material____. Buried Slab: Yes____No____
   b. Driven____. Drive Pipe Diam.____in. Depth____ft.
   c. Drilled____. Finished in Drift____. In Rock____.
   Tubular____. Gravel Packed____.
   d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:
   Building 10 Ft. Seepage Tile Field +75
   Cess Pool____ Sewer (non Cast iron)____
   Privy____ Sewer (Cast iron)____
   Septic Tank +50 Barnyard____
   Leaching Pit____ Manure Pile____
3. Well furnishes water for human consumption? Yes X No____
4. Date well completed 5-2-87
5. Permanent Pump Installed? Yes X Date 5-13 No____
   Manufacturer Red Jacket Type Sub Location Well.
   Capacity 110 gpm. Depth of Setting 80 Ft.
6. Well Top Sealed? Yes X No____ Type____
7. Pitless Adapter Installed? Yes X No____
   Manufacturer Meyer Model Number____
   How attached to casing? Mechanical
8. Well Disinfected? Yes X No____
9. Pump and Equipment Disinfected? Yes X No____
10. Pressure Tank Size 315 gal. Type Gov.
    Location Utility room
11. Water Sample Submitted? Yes____ No X

REMARKS:

Co. # 29538

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Andy Galatte Well No.____
    Address 8200 W. 111th St Palos Hills Il
    Driller Frank Sharpe License No. 102-122
11. Permit No. 131030 Date 4-21-87
12. Water from limestone (Formation) 13. County Will
    at depth 60 to 200 ft. Sec. 22-89 X
    14. Screen: Diam.____in. Twp. 34N
    Length:____ft. Slot____ Rge. 14E
    Elev.____

SHOW LOCATION IN SECTION PLAT
750'NL, 400'WL

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
8	Sch 40 PVC	0	61

16. Size Hole below casing: 7 7/8 in.
17. Static level____ft. below casing top which is 2 ft. above ground level. Pumping level____ft. when pumping at____ gpm for____ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Clay	10	10
Sand and gravel	50	60
limestone	140	200

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Frank Sharpe. DATE 5-15-87

IDPH 4.0
1/74 – KNS-1

SECTION 5

EPA FORM 2070-12

"POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT"